Civil Action No. 36194.

UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF MICHIGAN, SOUTHERN DIVISION.

LAKE CARRIERS' ASSOCIATION,
a corporation,
1411 Rockefeller Building,
Cleveland, Ohio 44113
and
Certain of its member companies,
individually, namely,

AMERICAN STEAMSHIP COMPANY, INC.,
a corporation,
1016 Marine Trust Building,
Buffalo, New York 14203

AMERSAND STEAMSHIP CORPORATION,
a corporation,
1016 Marine Trust Building,
Buffalo, New York 14203

THE REISS STEAMSHIP COMPANY,
a corporation,
2300 Terminal Tower Building,
Cleveland, Ohio 44113

GARTLAND STEAMSHIP COMPANY,
a corporation,
2300 Terminal Tower Building,
Cleveland, Ohio 44113

GREAT LAKES STEAMSHIP DIVISION,
Bethlehem Steel Corporation,
a corporation,
2600 Terminal Tower Building,
Cleveland, Ohio 44113

CLEVELAND-CLIFFS STEAMSHIP CO.,
a corporation,
1460 Union Commerce Building,
Cleveland, Ohio 44115

CLEVELAND TANKERS, INC.,
a corporation,
P. O. Box 6479,
Cleveland, Ohio 44101

ERIE SAND STEAMSHIP COMPANY,
a corporation,
Foot of Sassafras Street,
Erie, Pennsylvania 16512

THE HANNA MINING CO.,
a corporation,
100 Erieview Plaza,
Cleveland, Ohio 44114

HURON PORTLAND CEMENT DIVISION,
National Gypsum Company,
a corporation,
Ford Street,
Alpena, Michigan 49707

INLAND STEEL COMPANY,
a corporation,
30 West Monroe Street,
Chicago, Illinois 60603

THE INTERLAKE STEAMSHIP CO.,
Division of Pickands Mather & Co.,
a corporation,
2000 Union Commerce Building,
Cleveland, Ohio 44115

KINSMAN MARINE TRANSIT COMPANY,
a corporation,
1548 Rockefeller Building,
Cleveland, Ohio 44113

MEDUSA PORTLAND CEMENT COMPANY,
a corporation,
P. O. Box 5668,
Cleveland, Ohio 44101

COLUMBIA TRANSPORTATION DIVISION,
Oglebay Norton Company,
a corporation,
1200 Hanna Building,
Cleveland, Ohio 44115

LAKE FLEET DIVISION,
Republic Steel Corporation,
a corporation,
55 Public Square,
Cleveland, Ohio 44113

TOMLINSON FLEET CORPORATION,
a corporation,
2900 Terminal Tower Building,
Cleveland, Ohio 44113

GREAT LAKES FLEET,
United States Steel Corporation,
a corporation,
1600 Rockefeller Building,
Cleveland, Ohio 44113

WILSON MARINE TRANSIT COMPANY,
Division of Litton Systems, Inc.,
a corporation,
55 Public Square,
Cleveland, Ohio 44113

Plaintiffs,

vs.

RALPH A. MacMULLAN, Individually and as Director, Michigan Department of Natural Resources,
Stevens T. Mason Building,
Lansing, Michigan 48926

FRANK J. KELLY, Individually, and as Attorney General for the State of Michigan,
State Capitol,
Lansing, Michigan

RALPH W. PURDY, Individually and as Executive Secretary, Water Resources Commission,
Stevens T. Mason Building,
Lansing, Michigan 48926

MICHIGAN DEPARTMENT OF NATURAL RESOURCES AND THE MICHIGAN WATER RESOURCES COMMISSION,
Stevens T. Mason Building,
Lansing, Michigan 48926

Defendants.

COMPLAINT FOR DECLARATORY JUDGMENT AND INJUNCTIVE RELIEF.

(Filed March 16, 1971.)

Plaintiffs say:

1. This is an action for a declaratory judgment as authorized by Sec. 2201 of Title 28 of the United States Code and for injunctive relief as authorized by Secs. 2281 and 2284 of Title 28 of the United States Code, and is brought because there is an actual controversy now existing between the parties to the above-entitled action as to the standards of performance for marine sanitation devices applicable to federally licensed commercial, bulk cargo, vessels plying the waters of the Great Lakes, and the time frame within which such standards must be met, as to which matters plaintiffs seek the judgment of this Court.

2. Jurisdiction is grounded on Secs. 1331, 1333, 1337, 2201, 2281 and 2284 of Title 28 of the United States Code; the Federal Water Pollution Control Act as amended by the Water Quality Improvement Act of 1970, 33 U.S.C. Sec. 1151, et seq.; the Steamboat Inspection Acts of February 28, 1871 and May 27, 1936, 46 U.S.C. Sec. 361, et

seq.; the Boundary Waters Treaty of 1909 between the United States and Canada, 36 Stat. 2448, Treaty Series No. 548; and Article 1 Sec. 8, cl. 3; Article 3 Sec. 2, cl. 1; Article 6, cl. 2, Amendment XIV Sec. 1 of the Constitution of the United States.

3. The amount in controversy exceeds $10,000, exclusive of interests and costs.

4. Plaintiff Lake Carriers' Association is an organization incorporated under the laws of the State of Ohio with its principal place of business in Cleveland, Ohio. The membership of Lake Carriers' Association consists of 21 separate vessel companies, of which 19 are the individual plaintiffs named herein. The vessels enrolled in the Lake Carriers' Association account for more than 98 per cent of the total trip-carrying capacity of the United States commercial, bulk cargo, Great Lakes fleet.

5. Collectively, plaintiffs, other than Lake Carriers' Association, are the individual owners and/or operators of 187 American flag Great Lakes bulk cargo vessels, all of which are federally enrolled and licensed for employment in the coasting and foreign trade on the waters of the northern, northeastern and northwestern frontiers, otherwise than by sea, pursuant to the Act of February 27, 1877, c 69, Sec. 1; 46 U.S.C. Sec. 258. As federally licensed vessels navigating waters of the United States which are common highways of commerce, plaintiffs' vessels are subject to the provisions and regulations of the federal vessel inspection laws administered by the United States Coast Guard, the same being Title 52 of the Revised Statutes, 46 U.S.C. Sec. 361, et seq.

6. Article I of the Boundary Waters Treaty of 1909 between the United States and Canada, 36 Stat. 2448, Treaty Series No. 548, declares that the waters of the Great Lakes, from main shore to main shore, including Lake Michigan, shall forever continue free and open for the purposes of commerce and navigation to the inhabitants and to the ships, vessels and ports of both countries equally, and said Treaty prohibits enactment of any laws

or regulations inconsistent with such privilege of free navigation.

7. Plaintiffs, other than Lake Carriers' Association, are engaged in the business of providing vessel transportation, some for their own account and some for the account of others or both, throughout the entire Great Lakes-St. Lawrence Seaway Systems, serving in interstate and/or foreign commerce a variety of ports in the states of Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio, Pennsylvania, New York; and the Provinces of Ontario and Quebec, Canada. The principal commodities transported by plaintiffs are iron ore, from ports on Lake Superior to ports on lower Lake Michigan, the Lower Detroit River and Lake Erie; coal, from ports on Lake Erie and lower Lake Michigan to ports in Michigan, Wisconsin, Minnesota and the Province of Ontario, metallurgical and chemical grade limestones, from Michigan ports on Lakes Huron and Michigan to ports on lower Lake Michigan and Lake Erie; grain, from the head of the Lakes to ports on the Lower Detroit River and Lake Erie. There are also lesser movements of petroleum, gypsum, gravel, sand, cement, coke, pig iron scrap, and finished and semi-finished steel products, involving a variety of ports in different states. All such movements involve the performance of a transportation service by federally licensed vessels in interstate commerce over the navigable waters of the United States and sometimes Canada. In performing such interstate transportation services, it is almost inevitable, with only a few minor exceptions, for plaintiffs' vessels to transit the navigable waters of the United States which are also the territorial waters of Michigan. Even where a commodity movement occurs between two or more Michigan ports, in most instances it constitutes interstate or foreign commerce in that the vessel at some point in its round trip voyage must pass through the territorial waters of another state or one of the Provinces of Canada. In all, the total bulk commodity movement for the Great Lakes last year was 223,404,329 net tons.

8. Plaintiffs, as the principal users of the Great Lakes for navigational purposes, are extremely interested in "clean water" and preservation of the ecology of the Great Lakes, not only because such is in the national interest, but also because plaintiffs' vessels utilize these waters as their principal source of potable water as well as boiler water. Plaintiffs are desirous, within the limits of available technology and of protecting the water quality of the Great Lakes through the installation on their vessels of marine sanitation devices consistent with maritime health and safety, and the marine and navigation laws and regulations, applicable to federally licensed vessels. Even in the absence of any standards of performance for marine sanitation devices, but anticipating that requirements would be similar to those of shore-side facilities, many of the plaintiffs have voluntarily undertaken a program of installing on their vessels marine sanitation devices which produce an effluent equivalent to municipal secondary waste treatment systems. Plaintiffs have been discouraged from continuing this program, however, because of enactment of a proliferation of state and municipal laws throughout the Great Lakes imposing differing requirements despite the amendments to the Federal Water Pollution Control Act, enacted April 3, 1970, specifically dealing with the control of sewage from vessels utilizing the navigable waters of the United States, 33 U.S.C. Sec. 1151, et seq. Confronted with a multiplicity of conflicting state, municipal and federal laws and regulations imposing a variety of vague, uncertain and differing requirements with respect to the standards of performance for marine sanitation devices, plaintiffs bring this action for declaratory judgment and injunctive relief to determine the constitutional validity as applied to federally licensed vessels of the Michigan Watercraft Pollution Control Act of 1970, the same being Act 167, Public Acts of 1970, State of Michigan.

9. Defendant Ralph A. MacMullan is the duly appointed, qualified and acting Director of the Michigan Department of Natural Resources with official residence

in Lansing, Michigan. Under and by virtue of Act 167, Public Acts of 1970, State of Michigan, commonly known as the Watercraft Pollution Control Act of 1970, the Water Resources Commission of the Michigan Department of Natural Resources is charged with the enforcement of the provisions of said Act. Defendant Ralph W. Purdy; with official residence in Lansing, Michigan, is the duly appointed, qualified and acting head and in charge of the Michigan Water Resources Commission and exercises supervision and control of the individuals employed by the Water Resources Commission now engaged in enforcing the aforesaid Act. Defendant Frank Kelly is the duly elected, qualified and acting Attorney General of the State of Michigan with official residence in Lansing, Michigan, whose duty it is or may become to prosecute the plaintiffs for violations of the aforesaid Act, a copy of which is attached hereto and marked Exhibit "A."

10. Sections 3, 4 and 8 of the aforesaid Watercraft Pollution Control Act of 1970 in particular attempt to regulate, direct and control the disposal of sanitary wastes from federally licensed vessels while in Michigan waters in that such sections provide inter alia:

> "Sec. 3 (2) It is unlawful to discharge, dump, throw or deposit garbage, litter, sewage or oil from a recreational, domestic or foreign watercraft used for pleasure or for the purpose of carrying passengers, cargo or otherwise engaged in commerce on the waters of this state."
>
> * * * * *
>
> "Sec. 4 (2) A person owning, operating or otherwise concerned in the operation, navigation or management of a watercraft having a marine toilet shall not own, use or permit the use of such toilet on the waters of this state unless the toilet is equipped with one of the following pollution control devices:
>
> (a) A holding tank or self-contained marine toilet which will retain all sewage produced on the

watercraft for subsequent disposal at approved dockside or onshore collection and treatment facilities.

(b) An incinerating device which will reduce to ash all sewage produced on the watercraft. The ash shall be disposed of onshore in a manner which will preclude pollution."

* * * * *

"Sec. 8 . . . Commercial docks and wharfs designed for receiving and loading cargo and/or freight from commercial watercraft must furnish facilities, if determined necessary, as prescribed by the commission, to accommodate discharge of sewage from heads and galleys, and for deposit of litter, garbage, trash, or bilge waters from the watercraft which utilize the docks or wharfs."

11. Section 11 of the aforesaid Watercraft Pollution Control Act of 1970 provides that any person who violates any provision of the Act is guilty of a misdemeanor and shall be fined not more than $500. Since enactment of the aforesaid Watercraft Pollution Control Act of 1970, the Michigan Water Resources Commission has maintained a staff of enforcement officers who, at the direction of defendants herein, have threatened plaintiffs with indictments if they enter Michigan waters without the specific equipment required by Section 4 of the aforesaid Act; and plaintiffs, by such threats, are prevented from using and enjoying their own federally licensed property free from improper and unlawful molestations and interferences by the officials of the Water Resources Commission of the Michigan Department of Natural Resources in that compliance with the equipment provisions of Section 4 of the Watercraft Pollution Control Act of 1970 requires substantial alterations in the present vessels; that such alterations cannot possibly be accomplished by the opening of navigation which usually occurs on or about March 15; that plaintiffs will not be able to begin operations this year without violating some of the provisions of the Watercraft Pollution Control Act of 1970; that even were

plaintiffs able to so equip their vessels as to comply with Section 4 of said Act, which is a physical impossibility, there are to plaintiffs' knowledge no pump-out facilities in Michigan or elsewhere suitable for commercial vessels, and the Water Resources Commission has not promulgated any rules or regulations delineating what is an approved dockside or onshore collection treatment facility for commercial vessels, nor has it prescribed or determined as necessary the location and nature of the facilities commercial docks and wharves must furnish to accommodate the discharge of sewage from heads and galleys, all as required by Section 8 of the aforesaid Act.

12. In the early part of 1968, a conference was held pursuant to Section 10 of the Federal Water Pollution Control Act (33 U.S.C. Sec. 1160), among the states bordering Lake Michigan. As a result of that conference it was agreed, among the several states, that uniform rules and regulations should be adopted and that controlling the discharge of wastes from commercial vessels should be the responsibility of the Federal Government. Thereafter, on April 3, 1970, an Act of Congress was approved, commonly known as the Water Quality Improvement Act of 1970, PL 91-224, H. R. 4418, which Act amended the Federal Water Pollution Control Act, 33 U.S.C. Sec. 1151, et seq., by directing inter alia in Section 13 (33 U.S.C. Sec. 1163) thereof:

> "(b) (1) As soon as possible after enactment of this section . . . the Secretary . . . after giving appropriate consideration to the economic costs involved, and within the limits of available technology, shall promulgate Federal standards of performance for marine sanitation devices . . . which shall be designed to prevent the discharge of untreated or inadequately treated sewage into or upon the navigable waters of the United States . . ." "* * * the Secretary of the Department in which the Coast Guard is operating shall promulgate regulations, which are consistent with standards promulgated under this subsection and with maritime safety and

the marine and navigation laws and regulations, governing the design, construction, installation, and operation of any marine sanitation device onboard such vessels."

"(2) Any existing vessel equipped with a marine sanitation device on the date of promulgation of initial standards and regulations under this section, which device is in compliance with such initial standards and regulations, shall be deemed in compliance with this section * * *."

"(c)(1) Initial standards and regulations under this section shall become effective for new vessels two years after promulgation and for existing vessels five years after promulgation."

"(f) * * * After the effective date of initial standards and regulations promulgated under this section, no state or political subdivision thereof shall adopt or enforce any statute or regulation of such state or political subdivision with respect to the design, manufacture, or installation or use of any marine sanitation device on any vessel subject to the provisions of this section. Upon application by a state, and where the Secretary determines that any applicable water quality standards require such a prohibition, he shall by regulation completely prohibit the discharge from a vessel of any sewage (whether treated or not) into those waters of such state which are the subject of the application and to which such standards apply."

13. The Report of the Committee on Public Works of the United States Senate (Report No. 91-351, 91st Congress, 1st Session), accompanying S. 7, the companion Bill of H. R. 4148, which ultimately became the Water Quality Improvement Act of 1970, states at page 11, "The Committee intends that this new section will assist in preventing at the earliest possible time permitted by existing and advancing technology, economics, and other practical considerations, the discharge into the navigable

waters of the United States of raw or inadequately treated sewage from vessels." Added the Committee at page 11:

> "The general enforcement authority to accomplish this section has been vested in the department in which the Coast Guard is operating. This was done because of the similarity to other Coast Guard functions and the expertise of the Coast Guard in marine engineering. In order to insure adequate recognition of marine safety and other transportation aspects, the Secretary of the Department in which the Coast Guard is operating has been designated to develop and promulgate the regulations which pertain to the design, installation, and operation of marine sanitation devices and further to certify these devices as complying with such regulation standards. These regulations must also assure compliance with the standards of performance issued by the Secretary. It is the committee's intention that there be close cooperation and coordination between the Secretary and the Secretary of the Department in which the Coast Guard is operating in the development of the overall program."

Then stated the Committee, inter alia, at page 12, "The Committee recognizes that many states have moved to control inadequately treated or untreated waste discharges from vessels and lauds the efforts of those states. However, conflicting regulations and standards relative to marine sanitation devices present * * * potentially serious restrictions on interstate movement of commercial vessels." In order to avoid these difficulties, the Committee stated, it has " . . . provided for federal pre-emption of the authority to regulate the design, use, manufacture and installation of marine sanitation devices."

14. The Michigan Watercraft Pollution Control Act of 1970, as applied to plaintiffs' vessels, is unconstitutional, null and void for the following reasons:

(a) The Michigan Watercraft Pollution Control Act of 1970 and the Federal Water Pollution Control Act, as

amended by the Water Quality Improvement Act of 1970, conflict to such an extent that both laws cannot be enforced without impairing federal superintendence of the field in that the state enactment stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress because state requirements with respect to standards of performance for marine pollution control devices nullify federal discretion over the subject matter and interfere or conflict with the purposes or provisions of the federal legislation.

(b) The clear and manifest intent and purpose of Congress in enacting the Water Quality Improvement Act of 1970 was to occupy the field in that it adopted a complete and comprehensive system of regulation for the disposal of sewage from vessels on navigable waters, and while the required federal standards have not yet been finalized, the fact that the Congress in enacting subsection (j) of Section 21 of the Water Quality Improvement Act of 1970, 33 U.S.C. Sec. 1155 (j), provided that the Secretary of the Interior shall report to Congress the results of such research, studies, experiments and demonstrations relative to equipment which is to be installed on board vessels designed to receive, retain, treat or discharge human body wastes prior to the effective date of any standards established under Section 13 of the Act, demonstrates an unambiguous Congressional mandate to the effect that it was occupying the field to the exclusion of all state regulations with respect to marine sanitation devices. Further, through the vessel inspection laws the Congress maintains an extensive and comprehensive set of controls over ships and shipping and provides for federal inspection of a very broad nature covering the boilers, underfired pressure vessels, and the appurtenances thereof, also hull strength and integrate, safety devices, sanitary conditions, navigational and communications equipment, life saving gear, propelling and auxiliary machinery, electrical apparatus and other equipment of all vessels of plaintiffs. Michigan, through the enactment of the Watercraft Pollution Control Act of 1970, now seeks to change

the federal standards for the structure and equipment of vessels by requiring the installation of holding tanks or incinerating devices, equipment which involves a material structural alteration of the vessel and affects safety and stability which are particularly within the expertise of the Coast Guard. The vessel inspection laws were enacted because the Congress recognized that standards and designs for the structure and equipment of vessels may not properly be left to the diverse action of the states. The vessel inspection laws and the Michigan Watercraft Pollution Control Act of 1970 are directed to the same subject, the equipment of vessels, and they operate upon the same object. The Michigan Watercraft Pollution Control Act of 1970 is void because the federal inspection laws and the Federal Water Pollution Control Act, as amended by the Water Quality Improvement Act of 1970, were intended to occupy the field.

(c) If the Congress has not expressly pre-empted the field, the Michigan Watercraft Pollution Control Act of 1970 materially affects interstate and foreign commerce in matters where uniformity is necessary and relates to a subject demanding exclusive federal regulation in order to achieve uniformity vital to national interests in that plaintiffs' vessels serve all of the eight Great Lakes states and the two Provinces of Canada bordering the Great Lakes; and, in performing a transportation service, it is impossible for them to comply with a multiplicity of standards in each state or Province. The subject matter of the Michigan Watercraft Pollution Control Act of 1970 demands material uniformity of regulation so that state action is altogether inadmissible even in the absence of federal action.

(d) Apart from Article 1 Sec. 8, cl. 3 of the Constitution, relating to interstate and foreign commerce, the Constitution itself adopted and established as part of the laws of the United States approved rules of general maritime law and empowered Congress to legislate in respect to them and other matters within the admiralty and maritime jurisdiction. The Constitution denies to the states.

all power by legislation to contravene the essential purposes of, or to work material injury to characteristic features of the maritime law or to interfere with its proper harmony and uniformity in its international and interstate relations. Only the Congress can legislate within this sphere. The installation and operation of sanitation devices on commercial vessels is maritime in nature and all rights, liabilities and obligations in connection therewith are matters clearly within the admiralty jurisdiction. The installation and operation of sanitation devices on commercial vessels plying the waters of the Great Lakes, involving as it does trade and commerce between and among some eight separate states and two Provinces of Canada, is national in character and admits and requires uniformity of regulation affecting alike all the states, and Congress alone can act upon it and provide the needed regulations. The Michigan Watercraft Pollution Control Act of 1970 undertakes to prescribe exclusive rights and liabilities, undertakes to secure their observance by heavy penalties and onerous conditions and provides novel remedies inconsistent with the uniform maritime law and, therefore, impairs federal superintendence and preservation of the uniform maritime law.

(e) If federal law has not pre-empted the field to the exclusion of all state regulation, then enforcement of the Michigan Watercraft Pollution Control Act of 1970, until such time as the field has been so pre-empted, constitutes the taking of plaintiffs' property without due process of law in violation of Sec. 1 of the XIV Amendment of the Constitution of the United States in that plaintiffs, before entering Michigan waters, will be required to make extensive and expensive alterations to their vessels in the installation of holding tanks and/or incinerating devices, which devices will or may become wholly obsolete and worthless upon the promulgation of federal standards and which devices are of no immediate benefit to anyone because there are as yet no waste discharge facilities available for commercial vessels in any of the ports of Michigan or the ports of any other states. The only alternative presently available to such ship

operation would be to discharge holding tanks in non-Michigan waters, thus creating untreated concentrations of sewage in the Great Lakes subject to the vagaries of wind and lake current. Further, with respect to those vessels which merely transit Michigan waters and do not touch at Michigan ports, there is no legal remedy for compelling the installation of pump-out facilities in any other state. Consequently, such vessels are precluded from complying with the Michigan Watercraft Pollution Control Act of 1970, even were they to install holding tanks or incinerating devices.

(f) If federal law has not pre-empted the field to the exclusion of all state regulation, then enforcement of the Michigan Watercraft Pollution Control Act of 1970, until such time as the field has been so pre-empted, constitutes a denial of the equal protection of the laws in violation of Sec. 1 of the XIV Amendment of the Constitution of the United States in that such Act makes it unlawful for a commercial vessel to discharge overboard any sewage, whether treated or not, while at the same time permitting shore-based industry and municipalities to discharge inadequately treated sewage into the waters of the Great Lakes. Requiring commercial vessels to discharge wastes ashore into municipal waste treatment systems merely compounds the problem in that the municipal waste treatment systems in the principal ports of Michigan have not yet met the standards for secondary treatment imposed upon them by the Michigan Water Resources Commission and the Federal Environmental Protection Agency. There is no evidence that by requiring commercial vessels to discharge wastes ashore there is any better treatment of sewage wastes than the vessels can provide themselves given adequate time to comply with anticipated federal standards for the performance of marine sanitation devices.

(g) If federal law has not pre-empted the field to the exclusion of all state regulations, then enforcement of the Michigan Watercraft Pollution Control Act of 1970, until such time as the field has been so pre-empted, is violative of constitutional requirements of due process and the equal

protection of the laws in that the Act, particularly Section 3(1) thereof, is vague and ambiguous inasmuch as it does not specify with sufficient certainty the conduct which it intends to proscribe and punish, to the extent that men of ordinary intelligence must guess at its meaning and differ as to its application with respect to what discharges render the water unsightly, noxious or otherwise unwholesome so as to be detrimental to the public health or welfare or to the enjoyment of the water for recreational purposes.

(h) The Michigan Watercraft Pollution Control Act of 1970 is unenforceable in that the State of Michigan has not, in compliance with Sec. 13(f) of the Water Quality Improvement Act of 1970, made application to the Secretary of the Interior to determine whether any applicable water quality standards require such a prohibition in any of the waters of the State of Michigan.

15. The enforcement of the Michigan Watercraft Pollution Control Act of 1970 is working upon plaintiffs an unusual hardship and irreparable injury and damage for which there exists no adequate remedy at law. Plaintiffs are under firm commitments for the transportation of cargo during the ensuing navigation season. To meet these commitments requires that they enter Michigan waters which they cannot do except in violation of Michigan law. Thus, on the one hand plaintiffs are threatened with claims and suits for the failure to deliver cargo vital to Michigan and indeed the nation's commerce and industry, while on the other hand they are faced with extensive fines and penalties for violation of the Michigan Watercraft Pollution Control Act of 1970. Upon the opening of the navigation season, which usually occurs on or about March 15, plaintiffs will suffer daily the loss of business and patronage in consequence of the enforcement of the Michigan Watercraft Pollution Control Act of 1970, and such enforcement will in operation and effect amount to a confiscation of the property rights of plaintiffs in violation of the Constitution of the United States.

16. A delay in ascertaining and determining the rights of plaintiffs will result in serious loss and damage in that

the navigation season of the Great Lakes is limited and the plaintiffs' rights have been, are now and will continue to be violated unless plaintiffs are protected from the unlawful acts hereinbefore complained of, and the continuation of such unlawful acts by persons purporting to derive authority from the Michigan Watercraft Pollution Control Act of 1970. The injuries which will inevitably flow from the performance of enforcement officials acting under authority of the Michigan Watercraft Pollution Control Act of 1970 will be irremediable unless relief be granted by the Court.

WHEREFORE, plaintiffs pray:

1. That pursuant to Sec. 2284 of Title 28 of the United States Code, a District Court of three judges be convened to hear this cause;

2. That the Michigan Watercraft Pollution Control Act of 1970 as applied to plaintiffs' vessels be declared unconstitutional, null and void;

3. That the Court restrain the defendants from the enforcement of the Michigan Watercraft Pollution Control Act of 1970;

4. That pending the final hearing and determination of this cause upon its merits the Court issue a temporary restraining order restraining defendants from enforcing the Michigan Watercraft Pollution Control Act of 1970 and for such other and further relief as shall be proper and necessary.

SCOTT H. ELDER,
Attorney for Plaintiffs,
2700 Terminal Tower,
Cleveland, Ohio 44113.

Of Counsel:
JOHNSON, BRANAND & JAEGER,
2700 Terminal Tower,
Cleveland, Ohio 44113.

JOHN ARTHUR HAMILTON,
3266 Penobscot Building,
Detroit, Michigan 48226.

Verification.

STATE OF OHIO,
COUNTY OF CUYAHOGA, SS.

SCOTT H. ELDER, being first duly sworn, deposes and says that he is one of the attorneys for plaintiffs herein; that he has read the foregoing complaint and knows the contents thereof; and that the same are true to the best of his knowledge; that each of the plaintiffs has received and approved a copy of said complaint; that he has authority in writing from each of said plaintiffs to file said complaint on its behalf; that the reason this verification is being made by the attorney and not by the plaintiffs is that the plaintiffs are exceedingly numerous in number and located in several different states; and that the urgency of the action makes it impractical to obtain such verification.

SCOTT H. ELDER.

(Jurat omitted in printing.)

UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF MICHIGAN,
SOUTHERN DIVISION.

(Title omitted in printing.)

AFFIDAVIT OF VICE ADMIRAL PAUL E. TRIMBLE, U.S.C.G. (Retired), LAKE CARRIERS' ASSOCIATION.

(Dated March 16, 1971.)

STATE OF OHIO,
COUNTY OF CUYAHOGA, SS.

Vice Admiral Paul E. Trimble, U.S.C.G. (Retired), being first duly sworn, deposes and says:

1. That he is the duly elected, qualified, and acting president of Lake Carriers' Association, a non-stock, non-profit Ohio Corporation.

2. That the membership of Lake Carriers' Association consists of some 21 companies, 19 of which are the individual plaintiffs named herein; that all such companies own and/or operate Federally licensed Great Lakes bulk cargo vessels.

3. That one of the primary purposes and functions of Lake Carriers' Association is to promote and foster the development of Great Lakes commerce.

4. That as of the filing of the complaint herein, the Great Lakes navigation season is currently under way in that many vessels are in the process of fitting out and ready to sail, that some vessels have already sailed and that at least two vessels plan to begin operations in Michigan waters today.

5. That collectively the plaintiffs herein own and/or operate 187 American flag Great Lakes bulk cargo vessels, all of which are Federally enrolled and licensed for employment in the coasting or foreign trade on the Great Lakes.

6. That enforcement of the Michigan Watercraft Pollution Control Act of 1970 is working upon plaintiffs an

unusual hardship and irreparable injury and damage for which there exists no adequate remedy at law in that plaintiffs are under firm commitments for the transportation of cargo such as iron ore, coal, limestone, grain, petroleum, cement, sand, gravel, salt and other commodities, and that to meet these commitments requires that they transit Michigan waters which they cannot do except in violation of the Michigan Watercraft Pollution Control Act of 1970; that on the one hand, plaintiffs are threatened with claims and suits for the failure to deliver cargo vital to Michigan and the nation's commerce and industry, while on the other hand, if they do perform their transportation contracts they are faced with extensive fines and penalties in violation of the Michigan Watercraft Pollution Control Act.

7. That the Michigan Watercraft Pollution Control Act of 1970 is unconstitutional, null and void, and the enforcement thereof will, in operation and effect, amount to a confiscation of the property rights of plaintiffs in violation of the Constitution of the United States.

8. That any delay in ascertaining and determining the rights of plaintiffs will result in serious loss and damage because of the limited nature of the Great Lakes navigation season and the injuries which will inevitably flow from the performance of enforcement officials acting under authority of the Michigan Watercraft Pollution Control Act will be irremedial unless relief be immediately granted.

9. That plaintiffs are now being delayed in the fit-out of vessels and assumption of navigation, and they will suffer irreparable loss and damage if prevented from performing their obligations for the movement of cargo.

10. That the imminence of the navigation season prevents notice to said defendants and a hearing on the temporary restraining order requested herein.

Further affiant saith naught.

PAUL E. TRIMBLE.

(Jurat omitted in printing.)

UNITED STATES DISTRICT COURT

FOR THE EASTERN DISTRICT OF MICHIGAN,
SOUTHERN DIVISION.

(Title omitted in printing.)

TEMPORARY RESTRAINING ORDER.

(Issued March 16, 1971.)

Note: This order is printed in the Jurisdictional Statement at page 34 and is here omitted.

ORDER EXTENDING TEMPORARY RESTRAINING ORDER.

(Filed March 26, 1971.)

Note: This order is printed in the Jurisdictional Statement at page 36 and is here omitted.

UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF MICHIGAN,
SOUTHERN DIVISION.

(Title omitted in printing.)

DEFENDANTS' MOTION TO DISMISS, OR IN THE ALTERNATIVE, FOR ABSTENTION.

(Filed April 5, 1971.)

NOW COME defendants, by their attorneys, Frank J. Kelley, Attorney General of the State of Michigan, and Jerome Maslowski and Francis J. Carrier, Assistant Attorneys General, and pursuant to F.R.C.P. 12(b)(6)(7), move this Court to dismiss plaintiffs' complaint, respectfully representing to the Court:

1. The complaint fails to state a claim upon which relief may be granted for the reasons that:

(a) Federal standards of performance for marine sanitation devices to prevent the discharge of untreated or inadequately treated sewage into or upon the navigable waters of this State, as required under 33 USC, Section 1163, have not been adopted and, until such standards are promulgated, there can exist no conflict between the Federal Water Pollution Control Act, as amended, and Michigan law.

(b) That the appropriate federal agency's power to issue regulations remains unexercised and defendants may, as a matter of law, continue regulation under Act 167, PA 1970, until further federal action is taken.

(c) Congress, by enactment of Sections 1151(b), 1151(c) and 1160(b) of the Federal Water Pollution Control Act, as amended, has reserved to the State of Michigan the responsibility and right to prevent and control pollution of its navigable waters, thereby signifying a congressional intention not to preempt the State's exercise of that power.

(d) The regulation of pollution in the waters of this State under Act 167, PA 1970, is a matter of local State interest for protection of the public health, safety and welfare, is a proper exercise of the State's police power and congressional intention to preempt State regulation is not clearly and definitely expressed in the Federal Water Pollution Control Act, as amended.

(e) The Commerce clause of the federal constitution does not prohibit defendants from regulating pollution of the waters of the State, even though the State regulation has an impact on interstate commerce.

(f) That regulation of water pollution pursuant to authority of Act 167, PA 1970, is not in itself the regulation of interstate commerce but a valid exercise of the state police power and all presumptions should be invoked to find that it is constitutionally exercised.

(g) That, in the absence of an express contrary command of Congress not present here, the imposition of minimum federal standards of performance for marine sanitation devices does not prohibit the adoption of more stringent state standards.

(h) That Act 167, PA 1970, regulates even-handedly all watercraft on the navigable waters of this State to effectuate a legitimate public interest affording all equal protection of the laws without discrimination, the statutory impact on interstate commerce being only incidental and not constituting a direct burden on interstate commerce.

2. The complaint fails to state a claim upon which relief may be granted for the reasons that:

(a) The Court lacks jurisdiction because the State of Michigan is immune from suit under the Eleventh Amendment to the federal constitution.

(b) The Court lacks jurisdiction over the person of the State officers and agencies named herein for the reason that a suit against said officers and agencies is a suit against the sovereign State of Michigan.

3. The complaint fails to state a cause of action upon which relief may be granted against the Attorney General, State of Michigan, for the reason that said State officer is not in the first instance charged with the duty and responsibility of enforcing the criminal provisions of Act 167, PA 1970, but acts only in the event of failure of prosecution on the local level, such failure to act not being shown by plaintiffs.

4. The complaint does not state a claim upon which relief may be granted against defendants, Michigan Department of Natural Resources, Michigan Water Resources Commission, Ralph A. MacMullan and Ralph Purdy, for the reason that said State officers and State agencies are without authority to enforce the penalty provisions of Section 11 of Act 167, PA 1970.

5. Alternatively, the State defendants request this Court to refrain from taking any further action in these proceedings until plaintiffs institute an action in the State courts for determination of the constitutional validity of Act 167, PA 1970, which issue of State law can only be authoritatively construed in the State tribunals.

6. Alternatively, the State defendants request that the complaint be dismissed by reason of failure to join indispensable parties, the prosecuting attorneys of this State who are charged with the duty and responsibility, in their respective counties, of enforcing the penal provisions of Section 11, Act 167, PA 1970, pursuant to the statute in such case made and provided (MCLA 49.153; MSA 1961 Rev. Vol. 5.751).

This motion is based upon the records and files of this Court.

WHEREFORE, defendants pray that the above entitled complaint be dismissed with prejudice.

FRANK J. KELLEY,
Attorney General,
JEROME MASLOWSKI,
FRANCIS J. CARRIER,
Assistant Attorneys General,
By: FRANCIS J. CARRIER,
Attorneys for Defendants.
Business Address:
630 Seven Story Office Bldg.,
525 West Ottawa Street,
Lansing, Michigan 48913.

Dated: April 5, 1971.

UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF MICHIGAN,
SOUTHERN DIVISION.

(Title omitted in printing.)

ANSWER TO COMPLAINT FOR DECLARATORY JUDGMENT AND INJUNCTIVE RELIEF.

(Filed April 26, 1971.)

Reserving all manner of benefit arising out of the many insufficiencies and inconsistencies of plaintiffs to state a cause of action upon which relief can be granted, and expressly reserving the grounds alleged in support of defendants' motion to dismiss, or in the alternative, for abstention, now comes the Attorney General, State of Michigan, on behalf of defendants, and answering the complaint filed in this cause, says:

1. Answering paragraph one, defendants admit plaintiffs seek a declaratory judgment in the above entitled cause pursuant to the statutes enumerated in said paragraph. As to the remaining allegations of said paragraph, defendants deny the same.

2. Answering paragraph two, defendants admit plaintiffs claim jurisdiction on the statutory and constitutional grounds therein alleged. Further answering said paragraph, defendants admit plaintiffs allege jurisdiction under the Boundary Waters Treaty of 1909 and say that said treaty is irrelevant and immaterial to the issues of fact and law presented for determination in this cause. As to the remaining allegations of said paragraph not specifically answered, defendants leave plaintiffs to their proofs.

3. Answering paragraph three, defendants lack information sufficient to form a belief as to the jurisdictional averments therein alleged and leave plaintiffs to their proofs.

4. Answering paragraph four, defendants are without knowledge or information sufficient to form a belief as to truth of said allegations and leave plaintiffs to their

proofs. Further answering said paragraph, defendants allege that plaintiff, Lake Carriers' Association, is without authority to vicariously assert the constitutional rights of the individual plaintiffs named herein and allege further that said Association is not the real party in interest entitled to prosecute suit in this proceeding.

Further answering paragraph four, defendants allege that this proceeding is based upon plaintiffs' claim that a State statute is preempted by, or in conflict with, the Federal Water Pollution Control Act, as amended (33 USC § 1151, et seq), and said issue of law involves the comparison of two statutes, rather than claimed abridgment of federal constitutional guarantees, as alleged by plaintiffs.

5. Defendants lack information sufficient to form a belief as to the allegations of paragraph five and leave plaintiffs to their proofs, except that defendants admit the individual plaintiffs, other than Lake Carriers' Association, are the owners and/or operators of 187 American Flag Great Lakes bulk cargo vessels.

6. Defendants are without sufficient information to form a belief as to the allegations of paragraph six, except to say that consideration of the Boundary Waters Treaty of 1909 is irrelevant and immaterial to the issues of fact and law before this Court, and defendants leave plaintiffs to their proofs.

7. The Attorney General, State of Michigan, does not have sufficient information to form a belief as to the allegations of paragraph seven, except that the allegations recited in the first sentence of said paragraph seven are admitted.

8. Answering paragraph eight, defendants are without sufficient information to form a belief as to the allegations that plaintiffs are interested in "clean water," preservation of the ecology of the Great Lakes, or that said parties are desirous of protecting the water quality of the Great Lakes through the installation of marine sanitation devices consistent with maritime health and safety.

Further answering said paragraph, defendants say that numerous commercial and other vessels utilizing the waters of the Great Lakes, including vessels of the Ford Motor Company, the United States Coast Guard, and the United States Corps of Engineers have voluntarily undertaken a program of installing marine sanitation devices meeting the requirements of Act 167 of the Public Acts of 1970, State of Michigan.

Further answering said paragraph, defendants deny that a proliferation of state laws throughout the Great Lakes impose different requirements despite the amendments to the Federal Water Pollution Control Act and, in support of the denial, state that federal standards of performance for marine sanitation devices on plaintiffs' vessels, as defendants are informed and believe, are not promulgated to date and, if promulgated by the Environmental Protection Agency under 33 USC § 1163(b), the effective date of the standards is unknown.

Further answering said paragraph, defendants say that regulations required to be promulgated by the Coast Guard under that statutory section have not been drafted to date, the effective date of said regulations is unknown and, as a matter of law, until regulations promulgated by the United States Coast Guard are effective, the standards adopted by the Environmental Protection Agency may not be made effective. Further, that upon the promulgation of federal standards by the Environmental Protection Agency, said standards will not be effective as applied to plaintiffs for five years, for existing vessels, and two years for new vessels.

Further answering said paragraph, defendants deny that plaintiffs have any legal basis for the declaratory and injunctive relief here sought. As to the remaining allegations of said paragraph eight not specifically answered, defendants deny the same.

9. Defendants admit the allegations recited in the first, second and third sentences of paragraph nine, except that defendants deny that Ralph W. Purdy or Water Resources Commission, Michigan Department of Natural

Resources, are charged with enforcement of the penal provisions of Act 167 of the Public Acts of 1970, State of Michigan. Defendants admit Frank J. Kelley is the duly elected, qualified and acting Attorney General, State of Michigan, with official residence in Lansing, Michigan, and deny that it is the duty of said state officer to prosecute, in the first sentence, violations of Act 167 of the Public Acts of 1970, State of Michigan.

10. Answering paragraph ten, defendants admit that sections 3, 4 and 8 of Act 167 of the Public Acts of 1970, State of Michigan, as alleged by plaintiffs, regulate and control the disposal of garbage, litter, sewage, or oil from federally licensed ships while in Michigan waters. As to the remaining allegations of said paragraph not specifically answered, defendants deny the same.

11. Answering paragraph eleven, defendants admit that section 11 imposes penalties for violation of Act 167 of the Public Acts of 1970, State of Michigan. As to the remaining allegations of said paragraph, defendants deny the same and, in support of the denial, say that plaintiffs have filed this suit just days prior to the opening of the 1971 shipping season, that Act 167 of the Public Acts of 1970 was enacted eleven months prior to the filing of suit, to-wit: on *April 3, 1970* and that, contrary to the allegations of said paragraph, plaintiffs had ample time to make alterations to their vessels to effect compliance with the requirements of said State statute, and that plaintiffs have not, and are not now, being prevented from the use and enjoyment of their properties by alleged improper and unlawful molestations and interference of defendants, or of any of them, as claimed by plaintiffs. As to the remaining allegations of said paragraph not specifically answered, defendants deny the same.

12. Answering paragraph twelve, defendants admit that a conference was held in the early part of 1968 by the conferee states bordering Lake Michigan, and deny that the conferees agreed discharge of wastes from commercial vessels should be the responsibility of the federal government.

Further answering said paragraph, defendants admit that on or about April 3, 1970, the Water Quality Improvement Act of 1970 was enacted, amending the Federal Water Pollution Control Act, as alleged in paragraph twelve of the complaint, except that defendants point out that § 1163, as so amended, provides that "As soon as possible, after *April 3, 1970, and subject to the provisions of section 1155(j) of this title,* the Secretary . . . shall promulgate Federal standards of performance for marine sanitation devices . . ." [33 USC § 1163(b)(1)].

As to the remaining allegations of said paragraph twelve not specifically answered, defendants deny the same.

13. Answering paragraph thirteen, defendants state that plaintiffs' reliance upon committee reports, allegedly expressing the view that the Federal Water Quality Improvement Act of 1970 would preempt state authority, is irrelevant in this proceeding for the reason that the committee report is not the statute enacted by Congress, nor do those portions of said report recited by plaintiffs necessarily signify the intention of Congress in enacting the federal statute.

Further answering said paragraph, defendants say that section 1 of the Federal Water Pollution Control Act, as amended, expressly declares the policy of Congress to recognize, preserve, and protect the primary responsibilities and rights of the States in preventing and controlling water pollution [33 USC § 1151(b)], the right or jurisdiction of the States with respect to their waters (including boundary waters) remains unimpaired [33 USC § 1151(c)], and the Congressional declaration of state participation is only prohibited after the effective date of the initial standards and regulations promulgated under this section [33 USC § 1163(f)].

14. Answering paragraph fourteen, defendants deny each and every allegation therein, the allegations of said paragraph and each of its subdivisions, (a), (b), (c), (d), (e), (f), (g) and (h), being contrary to both fact and law.

Further answering said paragraph, defendants say that Act 167 of the Public Acts of 1970 is valid and constitutional in all respects, is a proper exercise of state legislative power for the purpose of promoting the public health, safety and welfare and its enactment does not unduly burden interstate commerce of these plaintiffs. Further, that Congress has not exhibited its intention to preempt said state statute by enactment of the Federal Water Pollution Control Act, as amended (33 USC §1151 et seq).

15. Answering paragraph fifteen, defendants deny the allegations of said paragraph and each and every sentence thereof in form and substance.

16. Answering paragraph sixteen, defendants deny each and every allegation recited therein.

WHEREFORE, defendants pray that the complaint be dismissed with prejudice and with costs to defendants.

FRANK J. KELLEY,
Attorney General,

JEROME MASLOWSKI,
FRANCIS J. CARRIER,
Assistant Attorneys General.

By: FRANCIS J. CARRIER,
Attorneys for Defendants.

Dated: April 23, 1971.

UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF MICHIGAN,
SOUTHERN DIVISION.

(Title omitted in printing.)

STIPULATION OF FACTS.

(Filed June 8, 1971.)

Lake Carriers' Association is a non-stock, non-profit Ohio corporation, the membership of which consists of 21 separate companies owning and/or operating a total of 194 Great Lakes bulk cargo vessels. Of the 21 members of the Lake Carriers' Association, 19 are individual plaintiffs in this case. In all, such 19 plaintiffs own and/or operate a total of 187 Great Lakes bulk cargo vessels, such plaintiffs and their vessels being identified in the membership booklet of Lake Carriers' Association attached hereto, made a part hereof and marked Exhibit A.

All of the vessels owned and/or operated by plaintiffs are federally enrolled and licensed for employment in the coasting and foreign trade on the waters of the northern, northeastern and northwestern frontiers, otherwise than by sea, pursuant to the Act of February 27, 1877 (46 U.S.C. Sec. 258). All of plaintiffs' vessels are subject to the provisions and regulations of the federal vessel inspection laws administered by the United States Coast Guard, the same being Title 52 of the Revised Statutes (46 U.S.C. Sec. 361, et seq.).

In all, as of January 1, 1970, there were a total of 442 vessels in excess of 1,000 tons on the Great Lakes. Of this total, 263 were vessels of United States registry, having a combined tonnage of 1,802,776 gross tons, and 179 were vessels of Canadian registry having a combined tonnage of 1,576,165 gross tons. The composition of the Great Lakes commercial fleet is more fully described on pages 40, 41 and 42 of the Annual Report of Lake Carriers' Association for the year 1969, annexed hereto, made a part hereof and marked Exhibit B.

Plaintiffs are engaged in the business of providing vessel transportation, some for their own account and some for the account of others, or both, throughout the entire Great Lakes-St. Lawrence Seaway System, serving in interstate commerce and/or foreign commerce a variety of ports in the states of Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio, Pennsylvania, New York; and the Provinces of Ontario and Quebec, Canada. The principal trade patterns of the Great Lakes are as shown by the series of flow charts attached hereto, made a part hereof and marked Exhibit C. These charts, prepared by the Great Lakes Regional Statistical Office of the Corps of Engineers for the year 1964 (the last year for which such charts are available) show by principal commodities the commerce of the Great Lakes and fully demonstrate the interstate and foreign nature of that commerce. The trade patterns shown are typical of those existing today, the only difference being in the volume of the cargo movement. The lake bulk freight commerce by years is shown on pages 52, 53 and 54 of Exhibit B. It is stipulated and agreed that the Annual Report of Lake Carriers' Association for the year 1969 (the last year for which such Report is available) actually reflects the water borne commerce of the Great Lakes insofar as American and Canadian registered vessels are concerned and is entered into evidence. Further, it is stipulated and agreed that plaintiffs' vessels are engaged in interstate and foreign commerce.

During the 1969 shipping season, consisting of a period of 281 days, there were 14,059 passages through the Detroit River, exclusive of sand carriers and passenger vessels. Of the total, 6,052 represented Great Lakes vessels and 979 were ocean vessels upbound. In the downbound direction, there were 6,049 Great Lakes vessels and 979 ocean vessels or a total of 7,028. Thus, there was an average of 50 passages per day or one vessel every 29 minutes.

With respect to the commerce at Sault Ste. Marie, Michigan and Ontario during 1969, there were 13,494

transits of the United States locks and 4,455 transits of Canadian locks or a total of 17,949 passages.

SCOTT H. ELDER,
Attorney for Plaintiffs.

JEROME MASLOWSKI,
Assistant Attorney General, State of Michigan.

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN,
SOUTHERN DIVISION.

MEMORANDUM OPINION DISSOLVING TEMPORARY RESTRAINING ORDER AND DISMISSING COMPLAINT WITHOUT PREJUDICE.

(Filed and Entered July 12, 1971.)

Note: This opinion is printed in the Jurisdictional Statement at page 21 and is here omitted.

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN,
SOUTHERN DIVISION.

TRANSCRIPT OF PROCEEDINGS.

(Filed May 6, 1971.)

Proceedings had and testimony taken in the above-entitled and numbered cause before the Honorable George Clifton Edwards, Jr., Circuit Judge, the Honorable Damon J. Keith, District Judge, and the Honorable Philip Pratt, District Judge, at Detroit, Michigan, commencing on Monday, April 26, 1971, in the forenoon.

APPEARANCES:

JOHNSON, BRANAND & JAEGER,
2700 Terminal Tower Building,
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BY SCOTT H. ELDER, ESQ.,

and

FOSTER, MEADOWS & BALLARD,
3266 Penobscot Building,
Detroit, Michigan 48226,

BY JOHN ARTHUR HAMILTON, ESQ.,
For the plaintiffs.

FRANK J. KELLEY, *Attorney General,*
630 Seven Story Office Building,
525 West Ottawa Street,
Lansing, Michigan 48913,

BY JEROME MASLOWSKI, ESQ., and
FRANCIS J. CARRIER, ESQ.,
Assistant Attorneys General,
For the defendants.

* * * * *

(25)

DAVID GROH, being duly sworn, was examined and testified as follows:

DIRECT EXAMINATION by Mr. Elder.

Q. Mr. Groh, would you please tell us your present occupation? A. My present occupation is vice president, marine manager of Interlake Steamship Company, which in turn is owned by, or is a division of Pickands Mather, which in turn is a wholly-owned subsidiary of Diamond Shamrock Corporation.

* * * * *

(26) Q. What is your educational background, Mr. Groh? A. My background is, attended the University of Michigan; I obtained a Bachelor of Science degree in 1944 in the School of Marine Engineering and Naval Architecture.

Q. Did you have any further education after that? A. From there on, as it was in a practical sense, military service, United States Navy; and from there, upon discharge, as a—I served in the Engineering Department at the Detroit Edison Company for a short term; and then proceeded to Great Lakes Engineering Works, the shipyard, as it existed in this area at that time; then for the last 23 years I have been associated at the present occupation previously described.

Q. What has been the nature of your duties with Interlake Steamship Company? A. My duties through my tenor of employment have been involved with, first, the mechanical end of the business, that is, the ship structure, ship machinery, maintenance, improvements (27) of these items; and then in later years, as a little closer related to the business aspects, of dispatch, cargo, business management, to the present position I am holding.

Q. How many ships does Interlake Steamship Company operate? A. Interlake owns 15 Great Lakes vessels and presently is operating 13 of these directly; the other 2 are on charter, being operated by others.

Q. What is the nature of these vessels? A. The nature of the vessel is that they are typical Great Lakes vessels, outfitted for the carrying of bulk cargo, what is termed the straight-deck vessels, in that they do not unload themselves as they depend on shore facilities for their unload.

They have the capability of operating within the Great Lakes system as far east, really, as Anacostia Island, which is in the Gulf of St. Lawrence. That is not the normal trade but they have this capability. They are in size, have the ability to transport from twelve thousand tons, land tons, bulk material, up to twenty thousand tons.

* * * * *

(28) Q. Now, what commodities do you carry in your vessels, Mr. Groh? A. We carry principally iron ore and then in a secondary fashion, coal and stone.

Q. Now, would you please point out on the chart of the Great Lakes which we have here, principally in the iron ore trade, what ports you trade to and from and then name the ports, please, so that they will be on the record? A. Well, our loading of iron ore all takes place in this north shore area of the Minnesota ports; and it would be predominantly at this port, Taconite Harbor, better than half of our material is loaded here. The balance is split between the ports of Silver Bay, two harbors, at Duluth and Superior itself. So that entire 80-mile stretch of shoreline represents the loading location of all of our iron ore as for our fleet. We then discharge this ore—there is a general split of the trade, after you depart the lower end of the St. Mary's River and it goes, in our situation, about equally split, down into Lake Erie and over into Lake Michigan.

(29) In the Lake Michigan area, we discharge principally at one of several docks in the Calumet River; also very heavy tonnage at Indiana Harbor, in this area; and now this last year, there is a new port called Burns Harbor—it is in connection with a new steel mill—and we do trade in this area. On the other side, the Lake Huron, Lake Erie situation, we discharge iron ore principally at

Toledo, Huron, Lorain, very heavy at Cleveland, Ashtabula, and occasionally at Conneaut and very heavy into Buffalo.

That is a general description of where we load ore and where we discharge it.

Q. How about coal? A. Our coal movement is all upbound and we have two principal movements; one is coal loading at Toledo and this is coal that is of metallurgical quality, and we discharge that across to Milwaukee. It is for the purpose of making coke. Our second major movement of coal is a loading here in the same Calumet River area. This is steam coal and this proceeds on the upbound voyage to Taconite Harbor for power-plant operation.

Q. How about the stone? A. Stone is a—represents less than ten per cent of our trade. Stone is loaded at the ports here, Rogers City, and also (30) Presque Isle, so-called Stone Port; and this in turn would be discharged in our case to the same steel plants here, into Lake Michigan, or, Lake Erie, as I previously mentioned, used in connection with the steel industry.

Q. What about grain? A. Grain is a spasmodic commodity, as I didn't mention it before, we do occasionally take a load of grain, actually, we are in the process of doing it right now. Grain is loaded in this Duluth-Superior area, and for the most part is discharged at Buffalo. And that is, we have three ships so engaged at this very moment, all three of which are paralyzed in the ice in the Buffalo area.

Q. Then, in your testimony, Mr. Groh, you indicated then that only in connection with stone do you actually touch at a Michigan port? A. That is correct. That would be our only normal trade that we have been conducting as on a year-to-year basis, that is, Michigan—of origin in Michigan.

Q. Now, how many men in your crews? A. They range from thirty to thirty-five.

Q. Now, how much liquid or waste or whatever you want to call it is generated per day on a vessel, per man? A. Well, we have made, as best we can, several measurements of this and we come to an amount in the neighborhood of 125 (31) gallons of liquid per man per day.

Q. And what would this— A. This being a minimum kind of number.

Q. What does this include? A. Well, this would include wash water, or drains from the normal showers, also the vehicle water as to handle sanitary facilities.

Q. Well, now, considering the nature of your trade and the number of men in your crews and the amount of water generated and so forth, have you given any consideration or made any calculation with respect to holding tanks? A. Yes, we have.

Q. What were those calculations? A. Well, we feel that with our trade pattern that we would have to have holding tanks capacity in the order of not less than 20,000 gallons at either end of the vessel, a total of 40.

Q. A total of 40,000 gallons. Why is that? A. Well, it is principally to take care of the time element involved. In our trade pattern, as I tried to describe it here, we have some long trips, as far as the Duluth to Buffalo, where we have to transit the two connecting rivers and of course just the sheer mileage element of it, it's a long, a long trip and one that is quite (32) susceptible to delays. And, in fact, that is the large delay we are running into right now, two of those vessels that I mentioned in the Buffalo area, two of the three have been in voyage now some thirteen days without benefit of really any opportunity to use a shore facility.

Q. Well, now, in planning something like this, the size tank you will put in, why do you plan to contain all of it rather than just the human waste? A. Well, as we understand it, this is where we would have to go, eventually, that this is not our first approach. We would prefer to treat the sanitary waste but if we are under a no-discharge situation, we must look at all containment then.

Q. Do you know what a noxious substance is? A. Well, I think I would know one if I were close to it. However, I don't know a legal or a normal definition, no.

Q. So, it would be your position, then, Mr. Groh, if you were to put in a holding tank, you would want to contain everything so that any noxious substance would

be covered? A. Yes, it would. There is a great expense in the time element of reconstructing a vessel and if we are going to do this, we would certainly want to have the feeling that when we were doing it, it would cover the entire situation.

(33) Q. Now, how big a tank would this be at each end? A. Well, we are talking about a tank that is, oh, in the order of twenty by ten by thirteen or about the size of a one-and-a-half car garage at either end of the vessel.

(Whereupon plaintiffs' proposed Exhibit No. 2 marked by the reporter.)

Q. Now, Mr. Groh, would you please examine this document that has been marked as Plaintiffs' Exhibit 2 and indicate what it is, please? A. Well, this is a profile of a deck plan of one of the larger ships of our fleet. This is a 25,000 tonner which would represent in turn as large a ship as you will find on the lakes today.

Q. Would you please point out to the court the various spaces there and what is located in the space? A. This ship is a cross section and, moving back from the bow is this area up to where I have the pointer, is termed the forepeak and this is the collision bulkhead, and, normally, this is really a void space preserved for the protection of the vessel and also may include some machinery this day and age, as with the bowthruster. This would be the area where this machinery would now be located. However, you don't usually put serviceable gear, not gear that you are going to use daily.

(34) In the next area, from here to here, is normally termed the blind hole—blind. And this area is used for storage now of potable water, drinking water, which the vessel does have to carry, and that is this tank that is cross-hatched right in the center of this blind hole area. Above this level are all living quarters for the crew and, of course, the pilothouse and the navigational spaces for the vessel.

From this point aft are the cargo holds, in this case, in this ship, there are four holds, one, two, three, four;

and which brings you to the machinery section, from here aft, below the so-called spar deck level, from this level down is all occupied by the vessel's propulsion equipment; fuel tanks, and associated equipment to make the vessel serviceable. From this deck up, once again, is the living quarters, primarily supplying the rooms for the afterend crew and also back aft is the galley, all of the commissary spaces are located aft.

Q. What is the space underneath the cargo hold? A. That is a ballast tank which you see here. It is an inner bottom but it is used for ballast water. The entire length of the vessel. The tanks aft under the (35) engine space are also used for feed water, pure water, for use in the boilers, reserve feed water.

Q. Now, if you were to put these large tanks in, Mr. Groh, where in this particular vessel would you be able to put them? A. I am not too sure. There is no space that is left open and unused as it is all used for some purpose right now. So in a sense you would have to either relocate existing or pack in tanks, maybe this tank that I referred to as a 20,000-gallon tank, you certainly aren't going to put that up against your drinking water tank. There would have to be a void. It might have to be separated in a number of smaller tanks, actually, to get that kind of capacity.

There is no hope of using a ballast tank for untreated sewage as this seems extremely impractical. Back aft, you have the same problem as there is no open space that, in which—now, back aft, here, there is a tank that is used for drinking water. That was built into the vessel originally and there is no other open space other than relocating, as I am not too sure that is a practical solution, or going up on deck. And, to go on deck, it brings other problems of carrying a weight that high in the vessel, it would have to (36) be a substantial construction as to handle such a tank of that size and weight high up in the ship.

Q. Why is it not practical to put untreated sewage in your ballast tank? A. Well, because all of these tanks, of course, are the main structure of the vessel and they

are subject to periodic inspection to maintain this structural integrity of the vessel, and this happens, of course, on short notice, if there is any suspect of the ship's hull envelope, has suffered damage, or as also happens, even without suspect of damage, every year, at least once annually, inspections are carried out within the inner bottoms; and then, of course, we have a five-year requirement for both the American Bureau of Shipping and the Coast Guard in which there is a total inspection of all spaces.

Q. How is this inspection made? A. It is made by men actually entering the tanks and examining, crawling in the tanks physically with a light and a small hammer and to actually visually inspect the structure within the tanks.

* * * * *

(37) Q. Going back to plaintiffs' Exhibit 1, Mr. Groh, where would pump-out facilities have to be established if you were to put these tanks in your vessels? A. Well, in order for us to conduct our normal trade in a businesslike manner, we would have to have pump-out stations at all of the—at one end of the—at one end or the other, we would have to have, or probably both, at the loading ports and unloading ports, so, I think we are talking about a pump-out station at basically every port I mentioned. These ports, as far as loading, however, or on a practical basis, the loading period is so short in time and you are shifting the vessel, if you are under an ore dock from spout to spout, this is really not a very practical spot that you would pump out while you are loading.

The more practical pump-out would be at discharge, at an ore receiving facility where you normally (38) would be in port from, oh, an eight-hour, an eight- to ten-hour period, and not repositioning the vessel during that period; but that would, of course, mean that you would need pump-out facilities at all of those various ports that I named earlier.

Q. In other words, for the servicing of your trade, you would have to establish ports outside of Michigan? A. Oh, yes.

Q. In other states? A. Oh, yes.

Q. All right, now, Mr. Groh, what is your relationship to the Lake Carriers' Association? A. Well, I am naturally a member, but I am also the chairman of the Fleet Engineering Committee.

Q. What is the Fleet Engineering Committee? A. Well, the Fleet Engineering Committee is a standing committee which treats with problems that are basically of a mechanical nature to the ships, as propulsion, as services of a mechanical nature, boilers, main engines, and, of course, all the associated systems that go with the ship, like your refrigeration, the drinking water system, and, of course, we have been considering for some time the treatment of sewage.

Q. In what form has this deliberation taken, in what form has (39) it taken? A. Well, the most recent time is we have been involved with reviewing what the various ships of the members of the association have done with their vessels as far as equipping them and looking—from that experience, looking ahead to what we would recommend should be done in the future. And we did develop a report along these lines.

Q. And what would you recommend? A. Well, our recommendations included a, well, a test program, and the test program in turn was split into three, three parts.

We were going to look at incineration and also at what we called full holding and partial holding. And the partial holding was where you would have a treatment plant which would remove the most obnoxious material. It would treat the effluent and of course then discharge the effluent at some known quality, but, would seem to have the advantage to us that of reducing the total volume as to be handled aboard ship. Those were the three principal areas which we felt deserved further investigation.

Q. Well, now, on this partial containment system that you mentioned, what would be the result in ports, for example, (40) when you come to the dock? A. Well, if we still had to pump out the effluent ashore?

Q. Well, could you retain the effluent? A. Well, we could—we could contain it while we were in port.

Q. That's what I mean. A. Yes, we would have the ability to contain it while we were in port that eight or ten hours. If it was then acceptable as when we were away from the restricted waters, so as to discharge this, yes, we could make a practical attempt at a system that incorporated this as a concept.

Q. In other words, actual treatment aboard the vessel then? A. Yes, it would be treated.

Q. What level of treatment do you think you could achieve? A. Well, I would think we could achieve, well, some of the ships have in a sense treatment that is similar to primary now and I would think that we could come to a secondary level without too great a difficulty.

* * * * *

Q. Now, Mr. Groh, I hand you here a document marked Plaintiffs' Exhibit 3. Would you please tell us what that is? A. Well, this is a listing of ships that have been equipped with sewage treatment equipment and that obviously was prepared by American Shipbuilding Company because they (41) are the people who have built this equipment to date.

Q. What is the nature of that equipment? A. Well, from the ships involved here, by their names and I can recall the time they were built, this is the equipment that is of a macerating-chlorinating type.

Q. How does it compare to primary treatment? A. It compares very, very well.

Q. Such as primary treatment on land? A. Very close to primary treatment.

* * * * *

Q. Now, Mr. Groh, I hand you here a document marked as Plaintiffs' Exhibit 4. Would you examine that and tell us what it is, please? A. Well, this is a kind of initial listing only this picks up the vessels' names and time from the biogest development, in other words, you might call this a second generation of the sewage treatment equipment.

Q. What is the biogest? A. Well, the biogest is a sewage treatment plant which is on the aerobic concept,

you actually use compressed air along with the holding of the material and it is by admitting the air and the oxygen in it, you have a digestive process going on. This is really approaching, in many ways, (42) secondary treatment.

Q. The same as in the municipalities? A. Very close.

Q. Now, Mr. Groh, is it practical with this biogest system to provide a holding tank after the effluent has been treated so that you could retain your waste in port? A. I believe it would be, yes, once again, if we did not have to hold materials, you see, as I said, on loading time of eight to ten hours, say, give it another two hours, something like twelve hours as retention time is where we would discharge no effluent whatsoever, I think that is practical.

Q. But then you would have to discharge it out in the lake on the run, is that right? A. That's right, after you have cleared port, you go well beyond shoreside facility, we would then look forward to discharging the effluent, the treated effluent.

Q. What other devices have you attempted to develop—I am thinking specifically of other vessels now. A. Well, in our own case, we have taken on the trial of an incinerating situation as we have equipped two of our vessels strictly on an experimental basis, a trial basis. They are just now in operation this last two weeks. The one ship here has made a preliminary report and we still have some problems aboard. So far, the information is (43) sketchy, of course, but we seem to have a problem of incinerating, of handling the volume. We can incinerate but we are, by observation, not by measurement yet, but by observation, trying to vaporize too much volume for the set-up that we have.

Q. Why is volume a problem? A. Well, the volume in this case, this happens to be a—we are putting the material into the main boilers of the vessel hoping to make use of the—as much of the parent equipment in the ship as possible. If we could introduce this into the hot zone of the boiler, we had hopes that it could be vaporized and the material completely incinerated. However, you can see

that if you admit too great a volume in any one area of the furnace, you just absorb too much heat from the furnace to totally do the job and instead of the material vaporizing in a sense while it is airborne and passing up through the passages of the flues of the boiler, you are getting still condensation dropping to the floor of the boiler, in this case, through the grates. That is what we can observe as being an obvious thing, too much volume.

Q. Well, what other devices are you familiar with that might be in the experimental stage? A. Well, there are several others. There are devices of the electrical-chemical type. These have been developed by (44) different manufacturers. And they have been—have been or are currently on test in vessels who are members of this association.

Q. Do these devices involve overboard discharge? A. Yes, they do.

Q. That is because of the volume problem? A. Yes, I would say that is primarily it.

* * * * *

CROSS EXAMINATION by Mr. Carrier.

* * * * *

(47) Q. What is the length of the trip, please?

* * * * *

A. I was trying to figure miles for you. The normal round trip to Buffalo—in the grain trade, is that what you are asking?

Q. That was the question. A. Well, in the grain trade, it has a lot of time to it, as an example, because of the slow loading and slow unloading. The trip would be about twelve days.

* * * * *

(48) Q. All right, now, can you tell us the amount of flush water per man per day that would be required on these toilets? A. Well,—

Q. Let me— A. It would be an estimate.

Q. All right, sir. A. Because very few of the systems are separated enough to totally measure it, but I would say roughly one-third of that 125.

Q. Roughly 40 gallons; is that correct, sir? A. In that neighborhood, yes.

* * * * *

(49) Q. Okay, sir, now, taking the number of men that you have signified in your prior testimony and assuming the number as thirty men times forty gallons per man times the twelve days, well, what resulting gallonage do you get? A. I get—the exact numbers I get, 14,400.

* * * * *

(50) Q. All right, just roughly tell us, if you will, by converting, that twenty two forty long—I don't have the figures—at twenty two forty, how many tons do you have? A. You are obviously going to have about fifty tons.

Q. All right. Is that the weight of the holding tank that is required, sir? A. Well, that is the weight of the fluid.

Q. All right, now, how much is the weight of the tank proper minus the fluid, if you know? A. Well, I don't know exactly—

* * * * *

(51) Q. All right. Now, let me ask you one more question, Mr. Groh: In your opinion, if a fifty-ton tank, that being the weight of the liquid, how seriously would that affect the stability of the vessel, if at all? A. Well, it would depend on its location.

Q. Let's assume, sir, that it was located on the center line amidship? A. Low?

Q. Low, sir. A. Well, if it was low enough and the tank was fully pressed up, as a full weight, you had no free surfaces, for instance, at this point it would be an add on to stability.

Q. There would be no detrimental effect as to stability; is that correct? A. Not if it was so located.

* * * * *

(52) Q. In the biogest system, am I correct that the sewage wastes are placed in a collecting tank for fast settlement? A. The wastes go into one large vessel, yes.

Q. All right. A. One large tank.

Q. And then is it not true that the overflow goes into a second (53) vessel? A. That's right.

Q. And in that second vessel, as I understand it, it is aerated; is that correct? A. It is aerated.

Q. And then the wastes are fed into a third vessel or compartment; isn't that true? A. (Nodding).

Q. And then they are sprayed with chlorine; is that correct?

Judge Keith: Excuse me, sir, would you please answer because Mr. Cushran can't get that when you are shaking your head.

The Witness: Oh, yes, yes, that is the general description of the macerating—

Q. And I suppose if the chlorine treatment is effective, that is fine, and if not, the contaminated waste is put overboard; is that correct? A. Well, yes, the waste goes overboard.

Q. And if it is contaminated, it remains that way? A. Yes, if the plant has not been operating as it should, it does go overboard.

* * * * *

(55) Q. * * * Is it true, witness, that the Manitowac Ferry System utilizes a straight holding tank on their vessels, if you know? A. I have heard that. I do not know it to be a fact.

Q. And that the American Oil Company of Whiting, Indiana, has equipped the vessel Amoco Wisconsin with a complete sewage retention system including sewage, galley water, and sanitary water? A. I have likewise heard that but could not verify it.

Q. And that the American Oil Company have equipped similar retention systems on the vessels Amoco of Indiana and Amoco Illinois? A. That I do not know.

Q. And that The Munson, which is owned by U. S. Steel, is equipped with a G.E. unit, being an electro-mechanical incinerator. Do you know that? A. Yes, I know that.

Q. And that that G.E. unit is but eleven by seven by five feet in dimensions and weighs but 10,000 pounds or five tons? A. I believe that to be correct.

Q. And that that G.E. unit separates solids and incinerates them. Do you know? (56) A. I don't know that it—it still has an effluent, to the best of my knowledge.

Q. And, are you aware that on the Robinson, which is owned by U. S. Steel, that that vessel is equipped with the Zimmer-Hyde chemical, mechanical incinerator? A. Yes, also they have a liquid disposal problem.

Q. And is it not true that the Zimmer system consists of chemical treatment and filtration of the waste? A. It does. And then the liquids still have to be disposed of somehow.

Q. And isn't the effluent under that system passed through an evaporator for boiler feed water? A. That is one method of using the effluent, yes.

Q. And under that system, isn't the resulting sludge burned in the boiler? A. This is still in test.

Q. Well, I know all of these systems are experimental, sir, but don't you agree that that is the manner in which the Zimmer system works? A. Yes, it works on that concept.

Q. All right, sir. And are you aware, witness, that S.S. Consumers Power owned by the American Steamship Company has installed the Zimmer system? A. Yes.

(57) Q. And that Johnson Shipping, Limited, of Toronto, has completely fitted its vessels with self-contained toilets? A. What was that name again?

Q. Johnson Shipping, Limited, of Toronto. A. I have no knowledge of that.

Q. And that the Wisconsin-Michigan Steamship Company has installed total retention holding tanks on their vessel, The M-V Highway 16? A. I have heard that said.

Q. And that the electrical toilet known as Incineret-

Urinal has been installed on vessels of the Wisconsin Steel Company? A. They have some type of toilet..

Q. You are not even familiar with their system, are you? A. Not under that terminology as—what did you call it?

Q. Incineret-Urinal, sir. A. This is what company, International Harvester?

Q. Wisconsin Steel Company, sir. A. They have one vessel.

Q. They have one vessel with that system; is that correct? A. Not to my knowledge.

Q. Okay. A. That is not correct.

Q. Were you aware that total retention systems are provided on (58) six vessels of the Ford Motor Company? A. That they are planning?

Q. No, they are on. Were you aware of that? A. No, I am not aware of that.

* * * * *

(61)

RE-DIRECT EXAMINATION by Mr. Elder.

Q. Mr. Groh, you indicated you had some docks. Would you point out where that dock is, please? A. This dock is located at Detour, Michigan, in the lower part of the St. Mary's.

Q. Have you installed pump-out facilities? A. No, we have not.

Q. Why? A. Well, two very big reasons. One is that we would have no idea of what kind of size of piping, location of the connections on the dock face; we have no idea of what we are going to match up with. And then the secondary hold up is probably even primary in nature because there is no place to discharge the material after it were pumped ashore. If there is no municipal sewage treatment plant in (62) the entire area.

Q. So if you did have a pump-out station, there would be no place you could pump it—there is no municipal system? A. That is correct.

* * * * *

RE-CROSS EXAMINATION by Mr. Carrier.

Q. Did I understand from you, witness, that you testified that the treatment aboard the ship was commensurate with primary treatment, or did I misunderstand you? A. In connection with the older style, macerator-chlorinator—

Q. Yes. A. —as produced by American Ship Building Company,—

Q. Yes. A. —that is correct.

Q. I wanted to ask you, in the course of your education, do you have a degree in sanitary engineering? A. No, I do not.

Q. Then, basically, I mean, unless you had that competence, could you distinguish between primary and secondary treatment? (63) A. Well, it would be best left to others.

* * * * *

(65)

CLARENCE MCTEVIA, being duly sworn, was examined and testified as follows:

DIRECT EXAMINATION by Mr. Elder.

Q. Captain McTevia, what is your present occupation? A. I am retired now. Shipmaster.

Q. And what license of master? A. Master—

* * * * *

A. Master of all waters and Great Lakes pilot, from Cape Pinhead on Lake Ontario to Duluth in Superior.

Q. When did you retire, Captain McTevia? A. Just this spring, April 7.

Q. Of this year? A. That is correct.

Q. How many years experience have you had on the Great Lakes? A. 37 years.

Q. How long in the capacity of a licensed officer? A. Since nineteen—spring of 1941.

Q. How long were you a master, active master? (66) A. Seventeen years.

* * * * *

(67) Q. Now, I would like you to examine the chart of the Great Lakes and with respect to these vessels, show the relative trades of these respective vessels, starting first of all with the Carrolton. A. Starting on the Carrolton, then?

Q. All right. A. The Carrolton, she ran, carried pig iron from Buffalo to Saginaw, up into Saginaw. And we used to go up to Calcite and load stone for Republic Steel in Buffalo and go back to load pig iron again for Saginaw. That was the Carrolton.

In '55, I traded between Toledo and Ashland, Ashland, Wisconsin, carried bulk iron ore, it was confined to bulk iron ore until the fall of the year. Then the last seven trips I remember; the last seven trips we come out of port inland down to—down to Buffalo, down to Black Rock Canal, through Tonawanda.

Judge Pratt: Would you give the states in addition to the ports, please?

The Witness: All right, sir. Let's start:

(68) Buffalo, New York, pig iron, to Saginaw, Bay City, Michigan. Then we carried stone from Rogers City, Calcite, back to Buffalo, New York.

Then we go to 1955, on the flat decker. We carried iron ore out of Ashland, Ashland, Wisconsin, down to Toledo, Ohio. And then on the last seven trips we carried stone out of Port Inland, Michigan to Buffalo, New York.

Now we go into the self unloader in 1956. That was a dandy. We carried coal out of Sandusky, Ohio, for Toledo, Ohio, loaded coal in Toledo, Ohio for Detroit; and occasionally, we used to carry coal out of Sandusky to Erie, Pennsylvania. We had 223 loads that year. Fifty-six. Fifty-seven was the E. G. Maguire. That was practically the same. We carried coal out of Sandusky for Toledo, loaded coal at Toledo for Detroit, occasionally we took a load of coal from Toledo to Napier, Napier, Wisconsin. Then we would go across the lake to Manistique or Grand Haven and load building supplies for Sarnia, Ontario and Windsor, Ontario. Fifty-six, Fifty-seven.

Q. In '58, I was on the Ben E. Tate, basically with the same trade, between T[illegible]o and Detroit, Marblehead to Cleveland, Ohio. Fifty-eight.

(69) In '59, I was on the steamer Sierra. She was another self unloader. And we traded out of Grand Haven to Racine, Grand Haven to Kenosha, Wisconsin, yes, Wisconsin. Then from—carried building supplies, stone, sand and the likes of that. And occasionally we load bituminous coal out of South Chicago for Oak Creek, Wisconsin; then back again to Grand Haven, to Manitowa, Ludington. Most all of the—most all of the shoreline there of Michigan, almost all the ports.

Let's see, fifty-nine; sixty.

In sixty, I sailed the J. R. Sanzibar. We ran between south Chicago and Racine and I was in that trade there for two and one half years, a round trip every twenty-two hours, carrying coal to Wisconsin Electric, Oak Creek.

Then in sixty-three, I sailed the W. W. Holloway from Toledo to Detroit, almost exclusively between Toledo and Detroit.

And, let's see, then in sixty-five, I got the steamer Ashland and she sailed between Silver Bay, Minnesota to Buffalo, New York. That whole season, except for three trips to Toledo. That was in the first year.

(70) The second year, we started out the season between Silver Bay, Minnesota to Buffalo, New York and after about two and one half months, we started to carry coal from Toledo, Ohio to Buffalo, down the Black Rock Canal to Tonawanda and Periot, New York. That's right on the Niagara River.

Let's see, sixty-six, sixty-seven. In sixty-eight, that was a short season. We sailed between Silver Bay, Minnesota and Toledo.

Sixty-nine. Then, in 1970, the last season I was on, we dealt exclusively between Silver Bay, Minnesota and Toledo, Ohio.

I think I have covered all the Great Lakes, most every port.

(Whereupon Plaintiffs Proposed Exhibit No. 5 marked by the reporter.)

Q. Now, Captain, I would like you to look at this chart which has been marked Plaintiffs Exhibit 5,— A. Yes.

Q. —and you notice these various lines going up the lake and so forth? A. Yes.

Q. Would you please explain to the court what those lines are? A. Well, let's start out, start with Mackinac. These are (71) downbound courses. They are separated, the upbound and downbound courses. The upbound steamer, and in case of foggy weather, it keeps them separated.

This downbound, this is a thirty mile stretch here, you come on by, you come down here to 205,186, then you come, you dispatch yourself from Chicago, on by the gas buoy, most all traffic goes down there. Then they run either to Gary, Indiana Harbor, south Chicago and the likes of that.

Now, these are all upbound courses, all the four upbound courses from different departure points, but they all converge up here at Big Stable. They come upbound, off Point Betsy and come up around between Sleeping Bear, north and south Manitou—there is the North Manitou Light, up by way of Maisley Passage, up to White Shoal and then they join again at Straits of Mackinac.

Q. Now, you will notice these lines, would you tell us what the lines signify? A. All are separate courses, all separate courses, all indicate the—it says northbound, it's quite obvious; and it gives the courses and the distances.

Q. Aren't they sometimes called limits? A. No, I have never heard it referred to as limits. They (72) are—there is north, you know,—

Q. Well,— A. Northerly limits and easterly limits, you mean, well, you could say that.

Q. Don't you mean by limit, how far east or west you are supposed to go when you are on this course? A. You are supposed to stay right on your course, you know. You can drift off in case of bad weather in the fall of the year. It is not unusual for us to go right up along

the shore here, up either southbound or northbound, but you are supposed to adhere to these courses, that is, as close to them as possible.

Q. All right, Captain, I have a pair of dividers here. I want you to step down— A. Surely.

Q. All right.—and tell us, please, how far off the upbound course is from, we will say, Grand Haven, start with Grand Haven? A. Grand Haven. Let's take the course here out of Vern's Ditch, Vern's Harbor. Approximately 30 miles.

Q. You pass 30 miles from the shore? A. That's the easterly course, the one out of Indiana Harbor is even further, and from south Chicago is even further.

(73) Q. How far is that course off? A. The westerly course is 38 miles.

Q. How about Muskegon? A. Muskegon, let's take the westerly, just exactly 30 miles.

Q. All right. How about the point of Big Sable point? A. Forty-three miles off.

Q. Forty-three. You don't even have to measure that? A. No, it says so right on there, see.

Q. I see. A. You don't have to.

Q. How about the next point? A. Point Betsy, five and three quarters.

Q. All right. A. Statute miles.

(Whereupon Plaintiffs Proposed Exhibit 6 marked by the reporter.)

Q. Captain, I would like you to examine this chart that has been marked Plaintiffs Exhibit 6 and tell us what it is, please? A. A chart of Lake Huron.

Q. And would you indicate the courses on that particular chart? A. Starting at the Lake Huron Light, we have the B. P. O. location, which isn't on here. Starting with the (74) Lake Huron Light, we have the southbound courses. This is the southbound course, up right through here, up to Detour. This separates here at Lake Michigan. Now, leaving Detour, this is downbound, the downbound courses. Now, this here, we didn't pick this downbound

course out of Cove Island—it is separated. This here is the upbound to Cove Island.

Q. Now, on the downbound course, Captain, how far off Harbor Beach does it measure? A. Twelve miles.

Q. Twelve miles? A. Twelve miles.

Q. How about on the upbound? A. Upbound is five.

Q. Five miles off the Beach? A. Five miles off.

Q. Where is the next—how about up around Alpena there to here? A. Up around Alpena, you pass, I think it is—yes, four and one half miles off.

Q. So, at no time are you closer than four and one half miles to shore? A. No, no, no, not at any time.

(75) (Whereupon Plaintiffs' Proposed Exhibit 7 marked by the reporter.)

Q. Now, Captain, will you examine this chart that has been marked Plaintiffs' Exhibit 7 and tell us what it is, please? A. It is a chart of Lake Superior.

Q. Will you indicate the courses, the usual vessel tracks on that chart? A. The southbound course, starting at Whitefish Bay, on up to Manitou Island, Eagle Harbor, Outer Island, Devil's Island, and then this takes you into Superior, Superior, Wisconsin.

Q. How far off Manitou Island do you pass? A. Three and one half miles.

Q. And what is the other closest point you come to? A. The other closest point would be five miles off Copper Harbor or Eagle Harbor, that is the closest, and your five —four and three quarter miles off of this point. And you are only a mile and a half off of Whitefish.

Q. What is located at Whitefish Point? A. It's Whitefish Point Light and a coastguard station.

Q. Just a coastguard station there? A. Just a coastguard station, that's correct.

Q. There is no village or city there? (76) A. No, none right in that area, no.

Mr. Elder: Your honor, I would like to move into evidence Plaintiffs' Exhibits 5, 6 and 7.

Judge Edwards: Any objections?

Mr. Carrier: No objection.

Mr. Maslowski: No objection.

Judge Edwards: They will be received.

Is the point of all this, Mr. Elder, that any requirement of emptying these tanks would mean going off course?

Mr. Elder: No, your honor, we want to show that the—

Judge Edwards: Why are we being treated to this lesson in Great Lakes geography, then?

Mr. Elder: Because, your honor, all the cities, towns and villages along the shoreline discharge directly into the lake. All of these cities with one or two exceptions have just primary treatment.

Judge Edwards: I see. And you are going to show this later on?

Mr. Elder: Yes.

Judge Edwards: And that is your equal protection, I suppose?

Mr. Elder: Yes.

(77) Judge Edwards: All right.

Mr. Elder: Also, we are showing that the vessels, for the most part, are way out in the lake where you are getting greater dispersal of sewage rather than just a short pipe from the shoreline.

Judge Edwards: All right.

Q. (By Mr. Elder, continuing): Captain, did you bring some other charts with you of your own? A. Yes, on the desk there—no, that's not them, back there on the seat.

Q. Oh. You will have to put these in order, Captain. Start with the head of the St. Mary's River. A. You have got the St. Mary's River first? Oh, yes.

Mr. Elder: Could you mark this?

(Whereupon Plaintiffs' Proposed Exhibit 8 marked by the reporter.)

Q. Will you examine this chart that has been marked Plaintiffs' Exhibit 8, Captain, and tell us what it is. A.

These are my own private charts. I renew them every year. I put my own courses in. I do this so I can navigate in fog and radar. This is the head of the Sault River. Here is Gros Cap here and the International Boundary Line. This is the International Boundary Line right here.

(78) Q. Would you explain your course in relationship to the International Boundary Line there? A. Here is your International Boundary Line here, and I am on the—

Q. Now, Captain, the reporter can't get it down when you say up here. You have to refer to specific points. A. Oh, I see. As we go on Gros Cap, I am in the waters of United States jurisdiction. And as I come down to Round Island, the Round Island turn, I come back into the Canadian waters. Now I am in Canadian waters and I go around by Point Aux Pins. And after I leave Point Aux Pins, now I go down into the U. S. waters again and I pass way down here and I keep going down here through the Sault locks, down into the lower rapids cut, I am in U. S. waters all the way. Now, that's the first, that's the start of the Sault River. Do you want the next one down?

Q. Take the St. Clair River next. A. St. Clair River?

Q. Yes. A. Okay. This is Detroit. This is the St. Clair River, that one right there.

(Whereupon Plaintiffs' Proposed Exhibit 9 marked by the reporter.)

(79) Q. Captain, examine Plaintiffs' Exhibit 9, if you would, please, and tell us what it is. A. This is the head of the St. Clair River. It will take you down into the Flats, northend of Lake St. Clair.

Q. Please explain your courses in relation to the International Boundary Line, will you? A. The International Boundary Line runs more or less right down through the center of the St. Clair River until you get down to Stag Island. Then, well, you are here in United States waters and I always refer to the old channel, strictly in Canadian waters there.

Now you come down below Stag Island and we are still on the United States side until you get to the lower

end of Stag Island. And now we are back and forth, we are in Canadian waters. I would say we are probably in Canadian waters two-thirds of the time the rest of the way down to the St. Clair River.

Q. This is downbound? A. This is downbound. And upbound you are almost the same.

Q. All right, now, how about going upbound on the St. Clair River? A. Well, starting at the lower end of the Flats cut-off, this is strictly Canadian. Now you are in Canadian waters almost all the way up to Algonac. And here you see-saw **(80)** back and forth. First you are in Canadian waters and then you are in U. S. waters.

Q. How about on the right, way up the river? A. The rest of the way up the river you are mostly on the United States side. Occasionally you will move over when you get up to Indian Point, Port Huron. That's it, right at your left hand.

Q. Left hand? A. Yes. You might find they are the same, upbound and downbound.

Q. Yes.

(Whereupon Plaintiffs' Proposed Exhibit No. 10 marked by the reporter.)

Q. Now, Captain, I ask you to examine the chart marked as Plaintiffs' Exhibit No. 10 and tell us what it is, please? A. Detroit River.

Q. Would you explain the courses, both upbound and downbound with respect to the International Boundary Line? A. This is called the head of the Detroit River, the upper end of Belle Isle. You can see where the International Border Line crosses at the coastguard station. The coastguard station at the head end of Belle Isle is just inside, just on the side of the United States. Now we are in Canadian waters almost all the way down the river. **(81)** You see my courses that I have laid out here are almost dead in line with the International Boundary Line until we get down to Zug Island and then we veer off slightly to the right there. Then come down to the Fighting Island Channel and after we pass half-way down Bal-

lard's Reef, we are in Canadian waters again all the way down.

Q. Now,— A. At the head end of this, here is the downbound channel here and there is the boundary line here and we are in Canadian waters all the way down until we get almost down to the Detroit River Light where we go back into the United States waters.

Q. Now, how about the course on the upbound voyage? A. Upbound, naturally, this being a channel, you don't go wandering off much from the downbound channel, just to keep out of the downbound guy's way. But, after we pass the Detroit River Light, now we are exclusively in the—we are in the Amherstburg channel, all Canadian, all Canadian, up through here. Now we are up as far as the Livingston Upper Light, halfway up Ballard's Reef, back into U. S. waters again.

Now we are almost—then you are in United States waters until you get up to Zug Island, just above the Rouge River, the Rouge River cut. Now we are back (82) in Canadian waters. Going upbound, we try to stay in Canadian waters, just inside. We can't be over a quarter of a mile off the beach or else Canada is calling us up and telling us we are exceeding the speed limit. We are only allowed eight miles an hour, eight miles an hour, a quarter of a mile off. Beyond the quarter, we are allowed ten.

Q. Now, Captain, in the Detroit River, will you tell us how the current sets? A. Yes. Well, in the Amherstburg channel—

Q. Well, could you start up at the head of the— A. You want to come down?

Q. Yes. Come down the river. A. Okay. Here we have—we are coming from Peche Island, the front range is over here. We come down from here. We have a terrific setdown through here. All the current sets, you go right straight down through here.

Q. Could you tell us which way it is setting in relation to the next boundary? A. It is setting to the west. It is setting to the west here, until after we get in here and make lee on Belle Isle and then we more or less lose

this all the way down. You just stay in the center. You don't veer. The current all sets over to the lower side of (83) the river.

Q. You mean the westerly side? A. On the westerly side, yes. Then you come down into the Fighting Island North Light, your set is to the westward here also, extremely to the westward, you got a tremendous current going down through here. The ship just seems to want to go right sideways, you have got to be very cautious in making this turn here.

And now after we get to the lee of Grassy Island, the current is more or less right straight behind you, right straight behind you here. And in this case where the current comes down the side of the channel, is when it will set you over on this side. And then you come down into Ballard's Reef and here we have a tremendous set. It sets to the westward, southwestward. We have all this current coming down through here and it sets you to the westward here.

Now, in the case of entering the Livingston channel, here we have a current that just seems to want to keep passing right straight down to the Amherstburg channel so we got to be very cautious here.

Now, you come here, you are going towards the east, towards Canada again. Now, we pass down through the Amherstburg (84) channel, the Livingston channel. Now, the current, after we pass through the dikes, will start you to the east again, well, naturally, because the flow is around in this way, down to the eastward.

Q. Will you look at Plaintiffs' Exhibit 9, Captain, and would you tell us how the current sets in the St. Clair River with respect to the International Boundary Line, you see, from Canada to the United States, and so forth? A. Okay. Coming downbound through the rapids, this is the Port Huron Rapids, where the International Boundary Line is, right down through the center. The current here is in all directions. It's a regular whirlpool, right in this area here. But down here is a strange thing. This current comes down and it sets backwards and comes up around

here, like here, and sets all the way up in here, up to the bridge here, it goes in the opposite direction, where on one side you might have a current of three and a half or four miles an hour here, but over here, it's the reverse, coming backwards, trying to get in here is very difficult. The current is all, goes up inside here.

Now, let's go down past the traffic buoy. The current is more or less down through the center of **(85)** the river here. It will split here. There is quite a current comes down and it sets eastward, more or less wants to come down toward the Canadian side. Then we pass down through St. Clair, the current is more or less right behind you. Now, we come down here to Recourse Point and this is the area where I live, right in here, and I watch the ice flow, and this ice goes down, right down inside this—stays right close to this beach.

Q. Which beach is that, Captain? A. This is the beach, you know, this is the east Chandler township area between Recourse Point and Marine City. Now the current is more or less right behind you until you get down into, by Algonac, and here the river splits, the north channel and the center channel, north and south channel. In here we have a tremendous current, here the current sets to the west. It follows this old channel. The channel is down through the south channel, through here. Until we get down to southeast pin Light Point. Now, the river is divided. This is the old southeast bend channel. This has been dredged out. There is a tremendous current goes through here and the ship wants to set right down on this point. So you have to hold up. The current is all going to the **(86)** westward.

Q. Then, generally, is it true, Captain, that the—the majority of the river, the current sets to the side, from the Canadian side to the American side? A. Yes, yes, it does, uh-huh.

* * * * *

(89) Q. Now, Captain, assume that you were to require every vessel passing through the Detroit River to stop and pump out holding tanks, what would happen?

A. This is—this is really ridiculous. It couldn't possibly—you would have a backup clear to Buffalo. You would have steamboats waiting hours on end. I know what it's like because I had to stop at the Consolidated Fuel to put on fuel. It takes us about an hour or an hour and ten minutes or an hour to put that fuel on there. In no time, there will be four or five boats backed up behind you waiting to put fuel on.

Q. What would be the situation if you had a pump-out station there, we will say, at Benton Harbor—not (90) Benton Harbor, but Muskegon? A. This is another ridiculous—this is impossible. You couldn't possibly work it out. You would have boats again backed up, all that stuff out, all those steamers out of Chicago, Indiana Harbor, Gary, they would be all backed up there. You couldn't—no, it's not—it's ridiculous, to even think of it.

Q. So, if you did this, you would actually be taking sewage from vessels in other states and putting it into Michigan? A. Exactly, you would be going from Illinois, Indiana and Wisconsin into Michigan and dumping it, dumping the sewage.

* * * * *

(91)

CROSS EXAMINATION by Mr. Carrier.

Q. Captain, you signified on your exhibits there that you had set certain upbound and downbound courses; is that correct? A. Yes, that is correct.

Q. And isn't it true that those courses are only recommended as distinguished from mandatory? A. They are my own courses. In the rivers, we have no designated courses by lake carriers.

Q. So that there are no mandatory upbound and downbound courses; is that correct? A. We must stay in safe waters, that's all.

* * * * *

(92) Q. Let me ask you this: As you transit the Detroit River waters, do you shut down the sanitary system? A. No.

Q. And, certainly your responsibility in navigating a ship doesn't have to do with whether someone is using the urinal; is that correct? A. No, definitely not.

* * * * *

Q. Okay. Now, if you did pump out at the twelve mile limit, twelve miles off shore, isn't it entirely possible that your sewage might be picked up by a passing vessel? A. I suppose, if there is one close by.

Q. Yes. And isn't it true, sir, that some vessels on the open waters of the Great Lakes do in fact draw in water for drinking purposes? (93) A. That is correct.

* * * * *

(94)

HARLOW B. MENO, being duly sworn, was examined and testified as follows:

DIRECT EXAMINATION by Mr. Elder.

* * * * *

(105) Mr. Elder: I asked him if he had made any calculations as to the size of holding tanks that would be required on an average Great Lakes vessel, considering the variety of trade.

Judge Edwards: Well, you can answer that question, Mr. Meno, and I guess you can answer it yes or no. Have you made such calculations?

The Witness: I have.

Q. Would you tell us the results of your calculations, please?

Judge Edwards: I think we will let the witness testify.

A. Well, I figured that a tank about roughly ten by twelve by fifteen feet, which is 18 hundred cubic feet, which would hold roughly 13 thousand five hundred gallons forward and aft, should satisfactorily, under normal circumstances, and without unanticipated and accidental delay, suffice as a holding tank for the normal operation of

a ship. Now, that would be two tanks, roughly ten by twelve by fifteen feet, one at each end of the boat.

* * * * *

CROSS EXAMINATION by Mr. Carrier.

(109) Q. And on, let us say, the South Chicago to Muskegon two-day run, you wouldn't need a very large tank, would you? A. Well, if you were trading—if you were trading regularly South Chicago to Muskegon, or if you were trading regularly from one stipulated port to another stipulated port, and in the trade of that sort, why, then you would just have to figure as to how many hours you were between docks—

Q. Yes, sir. A. —and how many hours it will be to complete a round trip.

Q. All right, sir. Now, you indicated that the fittings aboard ship and the fittings at the emptying facility had to coincide; is that correct, essentially? A. Yes.

Q. Would there be any reason why you couldn't dump the sewage into an open manhole that is connected with an existing sewer system? **(110)** A. Oh, no, no, you could pump into that as well as anything else.

* * * * *

(112)

CHARLES SPOONER, being duly sworn, was examined and testified as follows:

DIRECT EXAMINATION by Mr. Elder.

Q. What is your occupation, Mr. Spooner? A. I am chief engineer of the marine consultants and designers, a firm of naval architects and remodelers at Cleveland.

Q. What is your educational background, Mr. Spooner? A. I was graduated from the University—or, Cornell University in 1934 with a degree of mechanical engineer; and in 1935, a degree of Master of Science in engineering from the University of Michigan.

Q. Have you had any experience teaching? **(113)** A. I taught at the University of Michigan from 1936 until

1953 in the department of mechanical and then mechanical and marine engineering.

Q. What did you do after you left the University of Michigan? A. I went to the Great Lakes Engineering Works, which is a shipyard in River Rouge, Michigan, as assistant chief engineer at that point for a matter of three years or so; and then became the chief engineer of the yard.

Q. What was Great Lakes Engineering? A. They used to have a variety of terms applied to them, but, generally, it was a repair yard in lean times and it was a building shipyard and construction shipyard in good times.

Q. Approximately how many ships did you build there while you were chief engineer? A. During the period 1956 to 1960, we constructed three new vessels, two of which were maximum size.

Q. After you left Great Lakes Engineering, where did you next get employment? A. I went over to Cleveland and joined the firm of Marine Consultants and Designers, which was at that time called H. C. Donner Associates.

Q. Tell us briefly what does a firm of naval architects do? A. We are involved in new ship construction and ownership (114) reconstruction and conversion, changing the nature of the—depending on the changing nature of the trade—new construction would be a matter of, in the past nine years, since I have been with the company, a little over nine years, we have constructed about nine new vessels in various yards—gulf coast, east coast, one in Ireland—and we are involved at the present time with two new ships on the Great Lakes.

Q. Now, you say you are involved in construction. You don't mean the actual construction itself? A. We are responsible—we were responsible in one vessel for the contract plans and specifications and have been consulted since that time upon occasion in connection with the development of the design by the shipyard, did the detail work—I am speaking of the new U. S. Steel vessel which is currently building at Lorain. The other vessel is the Stewart J. Court, which is the new thousand footer constructed at Erie, which is nearing the final stages of com-

pletion. On this vessel, we were responsible for the entire detail design as well as the preliminary.

Q. You actually designed the vessel? A. That is correct.

Q. And what are the dimensions of those vessels, Mr. Spooner? **(115)** A. The U. S. Steel vessel is 858 feet by 105 foot beam. The depth, I am not quite sure of, but it is about thirty one and a half feet. The Stewart J. Court, which is the Litton—Litton built for Bethlehem, is one thousand feet overall length, one hundred and five foot beam and a forty-nine foot depth.

Q. What type of sanitation devices are being provided on those vessels? A. Both of these vessels are provided with the American Ship biogest units of their latest design. The equipment for these vessels was selected approximately, I guess, three years ago. Both are under contract for some such period as that.

Q. Now, if you were requested to make a calculation or design and installation for holding tanks for Great Lakes vessels, what elements or factors would you consider? A. We would begin with the length of the proposed voyage, the number of personnel aboard, the expected speed of operation, in other words, the overall elapsed time is of the essence as far as the particular part of it is concerned. The size of the holding tank would be, to my way of thinking, equal in size to the fresh water tank **(116)** or greater, depending on the method of operation.

Q. What about contingencies such as storms or fog or delays, such as the failure of open locks, that type of thing? A. It certainly should be provided for. I would gather that you are getting at the size of the fresh water storage tank and therefore the size of the holding tank. The quantity of water which we have been using in the last several years is in the order of 40 thousand gallons for a vessel that will have a five or six day round trip, based on four thousand gallons per day, which in turn is based on approximately thirty to thirty-five men.

Q. Now, have you made a calculation such as you have mentioned here with respect to holding tanks? A. Well, if we are expected to hold the entire quantity of

water which would be coming to us in the period of, say, five days, or six days, if that is the normal round trip, it would be—it has to be somewhere close to the same volume that is stored in the potable water tanks, or, if it is not stored there, it has to be—potable water, can, of course, and is picked up out in the open lake, in clean water, and put into these storage tanks so that conceivably your holding tank must be bigger than your water storage tank.

* * * * *

(117) Q. Mr. Spooner, I ask you to examine Plaintiffs' Exhibit 14, marked for identification 14, and tell us what it is please? A. This is the capacity plant which is prepared by Great Lakes Engineering Works for a vessel, No. 301, which is the Edmund Fitzgerald, being the first vessel built with 729 feet overall length and 75 foot beam, which is at that point the maximum size that was to be permitted through the MacArthur Lock.

Q. What size capacity tank did she have for water? A. She has very close to twenty thousand gallons aft and twenty-two thousand thousand gallons forward in the potable water tanks.

Q. Would you point out those tanks, please? A. This is the forward one in the dark hold and this is the aft one underneath the fuel bunker.

Mr. Elder: Your honor, I offer this in evidence at this time, just to show the relative size of (118) these particular tanks to the vessel.

Judge Edwards: Any objection?

Mr. Maslowski: No objection.

Judge Edwards: It may be received.

(Whereupon Plaintiffs' Proposed Exhibit 15 marked by the reporter.)

Q. (By Mr. Elder, continuing): Now, Mr. Spooner, I hand you a document marked Plaintiffs' Exhibit 15. Would you examine that and tell us what it is, please? A. This is the midship section drawing for hulls at Lorain, 867 and 868, which respectively are the steamers Philip R. Clark and Arthur M. Anderson.

(Shows Proposed Exhibit to opposing counsel.)

Q. Now, Mr. Spooner, if the owners were to request you to install holding tanks, where would you recommend they be placed in the vessel? A. In this particular series of vessels, it is conceivable that the holding tanks could be placed within the side tanks as individual tanks, constructed that the hull structure can be examined all around, and, hopefully, that they could be piped which would mean really that you would have to have four tanks in the vessel, two forward and two aft, adjacent to the quarters; and also adjacent to the locations where the pumps could be used **(119)** and the piping connected.

Q. Would you indicate on that drawing, please, that exhibit, where the side tanks are? A. To you, or to the court? (Turning to bench.) The side tank is this area here. This is the top of the tank. The bottom is connected to the inner bottom tank here. There is no subdivision between the two. And it is conceivable that in an area such as this or an area such as this, the tank, or the series of tanks could be constructed. If it is in a constricted area, the tank would be of an odd shape and it would be constructed most expensively—very expensive to build because of the location and the shape. The other locations, then, of the side tank, would involve considerable change in the vessel itself to be able to maintain the capability of handling cargo in the normal fashion.

Q. Would you actually take a pencil and indicate on that exhibit where those side tanks are? A. Yes, sir. (Complying with request.)

Q. Now, how does this vessel compare with the older vessels built between, say, 1907 and 1940? A. With respect to the nature of the structure?

Q. Yes. **(120)** A. Primarily, the structure is today, or at this time, because actually, these vessels were constructed in 1952. At the time that they were constructed, the change had pretty largely taken place from riveting to welding. There is still a fair amount of riveting in the seams of the shell, but the—outside of being larger and being refined in some details and designed around the fair

amount of welding, the midship section of an older ship does not look very far different from this.

Q. Was that with respect to side tanks? A. With respect to side tanks and the bottom side shell arches, which is what is shown on this print.

Q. Now, would you recommend such a holding tank installation? A. I would hope that there would be some other way to build them than to put in holding tanks at this location in this type of vessel. I do not recommend the use of side holding tanks, no.

Q. What would you recommend? A. I believe that a well designed treatment plant can produce a satisfactory grade of effluent such as to cause no more difficulty or nuisance than current systems that are used in municipalities.

Q. Are there such systems available for vessels? (121) A. There are.

Q. Now, what are they—let me strike that. Would it be feasible, Mr. Spooner, to have an installation such as the biogest system with later holding tanks that hold the treated effluent so that you could prevent discharge in ports and congested areas? A. Yes, I would say that would be a very feasible way to do it. The treated material coming from these units could be stored for a reasonable length of time in such tanks as the ballast tank, if that would be agreeable.

* * * * *

(122)

CROSS EXAMINATION by Mr. Carrier.

Q. Were you present in court this morning, witness, when we discussed the biogest system as a three-compartment system? A. I believe I heard that statement made.

Q. Can you tell me whether or not the biogest system, the three-compartment system, would in fact be larger than the holding tank you propose here? A. The biogest system, I do not believe, is a three-tank holding system or a three-tank system. It consists of a multiplicity of passages and tanks. The sludge material along with

the after maceration is recirculated and is reinjected time after time until the sludge is digested. There is a very small amount of solids that are in suspension carried on and when it is finally gotten to the last tank, it is chlorinated and there is a timing device that holds it until chlorination has been able to destroy a large percentage of the coliforms, and from there it is pumped over into a proposed holding tank such as mentioned here. The size of the unit is roughly six feet by eleven feet in base, but about six and a half to seven feet tall, for a piece of equipment that can handle approximately 50 men.

* * * * *

(127) Judge Edwards: Mr. Spooner, before you leave the stand,—

The Witness: Yes, sir.

Judge Edwards: —I would like to ask you a question or two. It seems as if the thrust of your testimony is that if you had to do something about the pollution problem arising from shipping, that you would prefer heading toward the idea of an internally contained treatment plant on shipboard?

The Witness: Yes, sir.

Judge Edwards: Is that correct?

The Witness: Yes, sir, that is correct.

Judge Edwards: As a matter of fact, that would end up being more expensive in terms of capital cost and operation than the holding tank problem absent the layout problem, would it not?

The Witness: It would be my opinion that it would be very much less costly to put a treatment plant aboard the ship.

Judge Edwards: Why?

(128) The Witness: The units cost in the order of magnitude of twelve to fifteen thousand dollars per unit; and in the vessel of this classification, it would require two units. You are into about 25 thousand dollars for hardware, something like this.

The piping already exists in this particular vessel connected to the central tank so it would be a mat-

ter of replacing the very rudimentary unit that is presently in and putting in the new biogest system. The total cost to the vessel would be something, I would guess, around 50 thousand dollars.

To put in a holding tank of suitable size, which I am predicating on this physical size of the fresh water tank, I would be willing to estimate that as 125 to 150 thousand.

Judge Edwards: Is this simply because of the additional size?

The Witness: There is a fair amount of steel involved and it is located—it would be located in the ship in a very awkward place to get at. It would be very costly to put in, the steel of the tank, to put in the welding and construction in such a confined location.

Judge Edwards: What are the comparable sizes, roughly—is it two to one, four to one?

The Witness: Per cost?

(129) Judge Edwards: No, in terms of the actual size of the tank units involved in the treatment tank facility and the holding tank facility?

The Witness: The treatment tank facility, as I mentioned, is around five and one half to six feet across and ten, eleven feet long and six and one half feet high, approximately, the size of it. The holding tank in the location such as this, if we do it the way my sketch showed it originally, would be eight and one half feet tall, which is the available space vertically. It would be an average breadth of about five feet and in order to contain with one tank, to contain ten thousand gallons, it would have to be thirty-five feet long.

Now, there is that space in the tank, in this side tank, but you have to have roughly four of these things to get up to the volume that you have in your fresh water tanks. There are other ways to do it, most of which would be equally expensive—other places to locate the tanks.

* * * * *

(131) Judge Edwards: Might I ask another question of you, Mr. Spooner: Since the probability is strong that you are not one of those who has to crawl through the ballast tanks, what is your view as to whether or not it is feasible under some circumstances to use ballast tanks for holding tanks?

(132) The Witness: Why, I have been there. I have done it. And I would certainly hope I would never be asked to go in one that had been used for a container like this.

Judge Edwards: I don't think that would be a good answer, but does that mean that under all circumstances you would have to do that?

The Witness: No; I would say that your—if you put raw material in against the hull structure of one of these vessels, you would be asking for some serious trouble because I would not anticipate anybody would care to examine things very closely. There are many places where sludge and other material of that type would hang up and would create a very unpleasant, at the very least, situation in the tank.

Judge Edwards: Well, really, this may be perfectly obvious to you, but the Act says that under all circumstances there has to be inspection of the—

The Witness: The hull structure.

Judge Edwards: —the ballast tanks?

The Witness: Yes, sir.

Judge Edwards: All right. That is what I really wanted to know.

* * * * *

(133)

RE-CROSS EXAMINATION by Mr. Carrier.

Q. Let me ask you this, please, Mr. Spooner: With the holding tank, there is essentially nothing mechanical that can go wrong; isn't that true? A. Except the settling out of the solids to the extent where they may be difficult to dislodge and also except for the fact that improperly operated, without any mechanical devices, you must depend on a fair amount of chemical added to maintain the material in a not too suitable septic condition.

* * * * *

(137)

JOHN E. KINNEY, being duly sworn, was examined and testified as follows:

DIRECT EXAMINATION by Mr. Elder.

Q. What is your occupation, Mr. Kinney? A. Sanitary engineer consultant, self-employed.

Q. Where do you reside, Mr. Kinney? A. Ann Arbor, Michigan.

Q. What is your education? A. Bachelor's degree in civil engineering with a major in sanitary engineering, in 1941; Manhattan College; Master in civil engineering with a major in sanitary from Cornell University, 1942.

Q. What has been your experience? A. I have worked with the New York State Department of Health, with the—in the United States Navy, CB's, in water supply for the Marines; and with utilities in the Philadelphia Navy Yard; for a consulting engineering firm in Spitzberger, for five years with the Ohio River Valley Water Sanitation Commission, the Eight-State Compact to clean up the Ohio basin; and since 1954 I have been self-employed.

Q. Was all this experience you just described in connection with sanitary engineering? A. Yes, in the broad scope of water management, water supply, (138) waste disposal.

Q. Are you a registered professional engineer? A. I am in five states, including Michigan.

Q. In what states, please? A. Michigan, Indiana, Ohio, Pennsylvania and New York.

Q. What professional societies do you belong to? A. Several, including the American Society of Civil Engineers, the National Society of Professional Engineers, American Society of Testing Materials, American Water Works, Sewage Works and some others.

Q. By whom are you generally employed in your consulting work? A. Principally with industry, but I have been and am acting as a consultant to state agencies, to municipalities, to civic groups and am on the Interior Department's Advisory Committee on Water Data for Public Use.

Q. Before what Congressional Committees have you appeared? A. Before the House and Senate Public Works Committees, the Government Operations Committee, Interior, working with the House Public Works Committee in an advisory capacity to the majority and minority on legislation for the last six or seven years.

Q. To what publications, if any, do you contribute? A. Well, presently I am a contributing editor to INDUSTRY WEEK and INDUSTRIAL WATER ENGINEERING.

(139) Q. What is it—what is that publication? A. The—in both of them, they are both trade journals for—the one for industrial management, the other one for people who are active in the water management field, either supply, re-use or as treatment.

Q. Now, you indicated your field is sanitary engineering. What does that encompass? A. Well, in the broad scope, it covers the scope of all the areas that are related to the health of man, it includes water, air, land disposal, rodent control, disease factors and while I stay on a peripheral activity in the others, my role is essentially in the water end of it, but the decisions in air or decisions in water or decisions on land affect the others. They are not able to be separated.

Q. Now, what is the basic purpose of pollution con-

trol and how is it defined in terms of standards? A. The purpose is to provide for the utilization of resources, to protect the uses that are deemed in the best public interest. We are using water as such as a resource for health, for public water supply, for recreation, fisheries, for navigation, industrial water usage. The idea is to determine the usage that is to be protected and then the definition of the standards of quality necessary to protect those uses and then develop an implementation **(140)** plan to achieve those objectives, which is essentially the heart of the and the objective of the Federal Water Pollution Control Law and the state law.

Q. Now, how does one relate performance standards to the standards designed for the protection of water uses? A. Sometimes that can be quite difficult. The idea is to develop the quality that is needed in the receiving water for the protection of the use and the normal degree of treatment that would be necessary for individual sources of waste that would achieve those objectives. Sometimes for administrative purposes or administrative ease, we reduce these standards down to uniformity of discharge or control at point of discharge. The difficulty, though, is that once that is separated from the stream standards as such, there is never a guarantee that achieving that objective will accomplish the result you want.

It also works the other way. You can go too far on a performance deal and actually provide a prohibition on a discharge. You may accomplish the protection of the water use you are looking for but you end up paying a penalty by interfering with other—with some other use, or additional cost. It may cause an air pollution problem; it may use additional cost of money that could go into better advantage **(141)** in other areas of the environment.

Q. Now, public law 167 of Michigan was adopted to protect the waterways of Michigan. Does it in fact? A. In my opinion, it really doesn't. It can under some circumstances. It can also cause difficulties under others. The principles on which we are operating with waste

treatment is to provide something that will be reasonably reliable, be able to provide a degree of treatment that will protect the usage and then where possible provide for further advantage to dispersal types of devices. What we are looking for is to maintain a minimum concentration. When you collect waste on a ship and bring it ashore, actually what you are doing is concentrating it further at a given point. Our pollution problems are essentially along the shore. They are not out here in the water.

The problem then, by bringing it ashore, you further increase the requirements necessary for treatment on shore or at the shore before they can be discharged. For small vessels, for small boats the matter of convenience of collecting them on the ship or in the small boat and bringing them ashore is reasonable.

On small inland lakes, it is highly reasonable to prevent any kind of discharge in the waterways, but when **(142)** it comes into the larger activities, the objective is to accomplish the quality of treatment, the water quality desired as quickly as is possible.

When the administrative rule which calls for acceptable treatment devices was changed in the law to eliminate that and limit it totally to holding tanks and/or incineration, it meant that until such time as equivalent treatment devices are provided on shore, instead of accelerating pollution abatement from ships, we are actually delaying it because we are bringing the wastes ashore to a point to provide for treatment that now does not exist.

Q. Are there pollution control devices used on land or ashore comparable to the biogest system? A. Yes, one of the big difficulties that we have had in pollution abatement has been to develop these facilities that could be used for small installations, a small number of homes, a shopping district, small resort area; and the trade has developed a package unit that for all practical purposes holds the sewage long enough to burn it up, to reduce the organic matter down to the point where it is mostly ash.

These facilities are used on shore. They discharge into very small brooks. They are permitted under state

law in areas that are recreational areas. And I have (143) personally experiences, controls and checks in areas where these residual streams is practically the total flow from one of these that went down to a park where children were playing in, because while there is still a bacterial count, the time is long enough so that the pathogenic count which carries the disease is pretty well burned out. If there is chlorination in addition, why the chlorination will assure the final destruction of the pathogenic bacteria.

And, actually, the application of a similar type unit then on ship should be identical in principle, as what you are going to be doing is providing a facility to make a water that is acceptable for quality that is not noxious, it is not unwholesome. It seems to me as though the equities would require the same kind of treatment devices in both places. Since putting these on ships can be done much faster and accelerating the program rather than wait for the on shore treatment to build up to it, we would take care of the pollution from the vessels much faster than by taking that route.

Q. Have you seen the biogest system? A. Yes, I have.

Q. Would you describe it for us? A. It is a self-contained unit which is about six by ten or (144) twelve, some seven or eight feet high, six or seven feet high. It is a series of cells wherein the waste water is put through a grinder, a comminuter type operation, tears down—tears down the heavier solids into small particles, and then by re-cycling it, you build up the biological activity in there that actually converts the organic matter over to carbon dioxide and water. This is the same principle that we have in the activating sludge plants for the large cities or these package plants for small communities. By holding it in there, if it is properly designed and operated, the residual discharge is going to be uniform day in and day out.

Now, as far as the operation is concerned, one of the requirements when the trade was working on the units for small communities or small groups, or areas, was to recognize that you are not going to have qualified operators

running a plant at all times for each community, as, I mean, for a shopping district, so that what you want to do is to build in something that is virtually fail-safe. These are. Some states require a meter or actually a recording meter on the device so that they can go around to check it to make sure that the motors have been running through the whole period of time. As long as they run, the results are going to be acceptable.

(145) Q. Now, Mr. Kinney, it has been suggested that these vessels could use their ballast tanks as holding tanks for raw sewage. Do you have any comment on that? A. One of the difficulties that we encourage (sic) in municipal treatment units is the accumulation of organics in—against metal surfaces. Even though the solution may be aerobic, the contact between metals and the solids goes anaerobic which means that there is no oxygen present. The decomposition of that product is exceedingly acidic and you begin to have considerable deterioration and corrosion of the metal.

To take a holding tank in a ship which really wasn't designed for easy flushing or cleaning, to allow the settling, the material to be standing in there for a period of time would mean that the solids would settle out. While you might be able to pump them, pump out the bilge water that might be in there or replace it with other water, unless there was an actual inspection of it and a thorough flushing each time, you could well have settling solids that over a period of time would give you the corrosion that you are not interested in obtaining, taking much of a hold on the bottoms of ships.

Q. Is there any particular health problem in connection with holding tanks? **(146)** A. They can be controlled by the amount of chemicals that are added, but when you add chemicals to maintain odors, you can also find that if your ship is going to be running for a longer period of time than expected, the waste waters become quite septic. The health may not be impaired but the odor is such as would give rise to objection.

Then there is another possible difficulty, too, and that is in order to keep the bacterial activity from really gen-

erating in there, to give off gas, and unless this control is maintained—incidentally, if it goes anaerobic, the gas that is given off is a combination of methane and carbon monoxide which is explosive. We have learned the hard way that you have to design sewage treatment facilities to prevent—to anticipate the possibility of an explosive mixture.

But assuming that you could maintain the quality so that the explosive mixture didn't develop, which would mean that you would be adding some type of a bacterial static chemical to bring about bacterial action. Comes the day when you pump direct into the municipal sewage treatment plant, the sewage treatment plant will receive a slug load. The city of Detroit could well dilute it out. This kind of waste discharge into a small community, particularly if they had secondary treatment, would disrupt **(147)** the operation of the treatment plant.

One of the biggest difficulties that we have in communities are small industries or laundries dumping batch loads. They do upset the municipal plant. I would hate to see a program established that would actually promote operating difficulties by bringing these slugs into the small community, and 40,000 gallons out of a ship would be a slug load or it could even be a slug load for the city of Detroit, depending on how close to the sewage treatment plant it is discharged.

Q. What is primary treatment? A. Primary treatment is—provides for the precipitation of solids that will normally settle within two hours retention time, because, you know, everything organic uses about one third of the oxygen demand of the waste water and it may or may not be followed by chlorination for sterilization purposes.

Q. What is secondary treatment? A. Secondary treatment, the solids in sewage are about one-third soluble and one third colloidal—very fine—that could be precipitated with chemicals—one third of them will dissolve. The secondary treatment is taking the effluent from this primary settling and adding a bacterial action **(148)** to try to tend to destroy the colloidal and dissolve solids.

Q. Can you equate the biogest in terms of whether it is primary or secondary treatment? A. The package aeration units are considered secondary treatment and with the data that I saw from the public health service review, we are checking on these, on actual shipboard operation. It qualifies very nicely as secondary treatment. There is about 85% removal of the organic matter.

Q. Taking a few of the port cities around the lakes, Mr. Kinney, such as Detroit and Muskegon, what is the status of their waste treatment program, do you know? A. From talking with people at the state on the status, we are into the area yet of primary treatment or with the addition of chemicals for chlorination, and directed towards a secondary treatment program, but there are some very real delays in the financing of them.

Q. What type of treatment does Detroit have now? A. Detroit has the equivalent of primary treatment but they are starting in on a construction program to go towards the secondary. Mr. Remus was complaining this noon to the federal administrators that they are not getting the money that was intended to carry. So there is a real question **(149)** whether it would be the equivalent of secondary treatment.

Q. You don't know when Detroit will have the equivalent? A. (shaking head negatively)

Q. What is the particular pollution problem in the Detroit River as far as Detroit is concerned? A. Well, there is much talk about the effect of the Detroit wastes on Lake Erie, but if we take a look at the pollution problem in terms of the solid load, in terms of the—which can settle in the river and cause considerable sludge deposits, the organics which can consume oxygen and the nutrients which can encourage the bloom of algae, the primary plants take care of the sludge deposits. The Detroit River really doesn't have an oxygen problem whatsoever as long as the secondary treatment here won't make a change in the river whatsoever.

The third part, to go after the nutrients level, since Detroit will still be discharging at a point into the close

to shore waters, even with a ninety percent reduction of phosphates, the nutrient concentration will still be high enough to trigger a bloom. This is one of the ironies of designing according to regulations. They could disperse it across the river and accomplish the protection of the downstream river at a much cheaper operation, but it is the same **(150)** principle in terms of dispersal from a waste treatment as from a device, as long as it is away from shore, or a ship.

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(153) Q. (By Mr. Elder) Can you give us a definition of sewage? A. The definition in the sanitary engineer's field is the waste from the—domestic sewage is the waste from humans, galleys, commercial establishments and homes and if takes all body wastes. It is a quality in water such that it would impair use. It is definitely untreated or inadequately treated, but treated sewage is not sewage. Treated sewage is an acceptable water supply. And that's **(154)** where I differ with the definition that is maintained in Public Law 167 where sewage is human waste, whether it is treated or untreated. If it is treated, then it is no longer sewage, if it is adequately treated.

Q. This is my last question to you, Mr. Kinney: Would a properly designed and operated biogest unit or some similar biological unit providing treated water which is—which if discharged into the waterways, would be such as to prevent it being rendered noxious or unwholesome otherwise?

Mr. Carrier: Oh, I think that calls for a complete legal conclusion, your honor, definitely.

Judge Edwards: Noxious or unwholesome—the only thing that I can see that is objectionable about that is that I won't know what noxious means, either, which is the objection that the plaintiffs are making. I think we will let him explain his opinion on this.

The Witness: Very frankly, with this kind of treatment, if it doesn't render it as acceptable so that it is no longer noxious or unwholesome, we are in a

real exercise in futility, in putting in these waste treatment plants. Very frankly, the operating, tightly-operated (155) waste treatment plants do render water acceptable and not noxious or unwholesome.

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CROSS EXAMINATION by Mr. Maslowski.

Q. Mr. Kinney, just what is wrong with, say a ship containing its sewage in the holding tank as far as a pollution control device is concerned? A. It will depend on whether or not the device is such a ship as the Bob-Lo which stays close to port, short hauls, if the holding tank is properly designed so that it won't have the accumulation of solids and has got a quick pump-out, I would think that would be an excellent device, but as far as being a total remedy, I think that the other devices are much preferable and I think the damages or the difficulties that are inherent in the holding tank are not all answered.

(156) Q. Well, what's wrong with a holding tank, for example, let's be specific. A. It's difficult—I thought I had been before. Holding tanks, if the purpose is to provide an acceptable water quality, the purpose of the whole treatment device is to provide a water that is acceptable for quality, and if the idea is to accelerate that acceptable water quality, there are other devices and other means available that can do exactly the same thing that would be preferred, but in terms of the holding tank itself, if a holding tank can be small, easy pump-out, and relatively frequent pump-out, the holding tank in itself would have no difficulty. Holding tanks for small boats make sense.

Q. How small of a boat are we talking about now? A. Talking about the size that would not have mechanical capacity on it to be operated continuously or if the operating activity of the boat would be intermittent.

Q. Doesn't a holding tank have this advantage, that the sewage that is generated aboard ship is discharged in this holding tank and it is kept there and then finally the ship gets to a selected point and it discharges that sewage

at that selected point—isn't that the advantage of a holding tank? (157) A. I think that's one of the real disadvantages.

Q. Why? A. To put 40,000 gallons from one of these into a small municipality in terms of the treatment plant, I would hate to be the operator of the plant every time you dump.

Q. Aren't you making an assumption that every time— A. Uh-huh.

Q. —that they are going to unload the holding tanks, that it is going to be in a small treatment facility and there is going to be some kind of disadvantage? Let's assume that we have a good treatment plant. What is the disadvantage going to be then? A. Only—I am not arguing about it being good treatment. I am fully expecting you are going to have good treatment in all communities. What I am arguing here is that this unit, once it is established as a requirement, should be available to be dumped in any port that you reach.

If you have got the possibility of diluting out, large volume, such as in Detroit, then you would have an answer, but in terms of the small town, to bring this kind of a slug around, you hold it for five days and it is going to be septic. The chlorine demand is going to be high. When it gets to that sewage treatment plant, (158) the sewage plant operator is going to know about it. He will have blinking lights all over the place. He won't be able to maintain the chlorine demand. The chlorine demand will go up, which means that the discharge from his plant is not going to be properly chlorinated and he is going to be in violation of the state law.

Q. Are you still assuming discharge in some small plant, but now,— A. You could put ten thousand gallons into Muskegon and do it.

Q. If the Water Resources Commission upgrades its plant to secondary treatment,— A. Uh-huh.

Q. —then you are going to have a better handling of the wastes because of that fact? A. No, not quite.

Q. And isn't it true that all of these communities are

going towards secondary treatment? A. No, not quite. You see, when you get into secondary treatment, the higher degree of treatment, the more care it requires. You go into biological activity, you must maintain very close controls. You maintain a high PH level in a holding tank so that you won't have it go septic, dump that into a municipal system. When it hits, **(159)** the biological activity is going to throw it out of operation totally. Then the community is going to pass a regulation that won't permit them to dump in passage, which means that when you go to shore, instead of being able to pump out in a hurry, you are going to have to hold—to have a holding tank and have a regulated discharge, which means it will take a number of hours before a ship can unload.

Q. Well, you again are assuming that every time a ship gets to a discharge point, it has got its tanks full that has developed a septic condition, and you know this isn't so. A. I know that sewage can become septic in a matter of 12 hours.

Q. Well, that may be so, but certainly this will be taken into consideration when these facilities are set up and the regulations are enacted, aren't they? A. I am at a loss—who would you regulate—they have already established the design for treatment facilities and there are no provisions for these kind of dumps in Michigan municipalities as far as I know anywhere.

Q. Well, this is a matter of future programming. Now, isn't it true that one of the disadvantages of the type of system that discharges at any **(160)** particular point of the line is that you can have the ship, or at least the discharge of sewage near water intakes, near a beach area—what guarantee do you have that there won't be these discharges? A. From the larger ships, what you are going to have is a navigation channel they are going to have to stay in so they won't be in the body contact area. If there are body contacts, it is going to be skiing and they wouldn't be out in the main channel. As far as the quality is concerned, the degree of treatment that would be coming from this unit would be no different than what you are

now requiring for the cities when they discharge in those areas that are listed as such as to be protected for body contact sports.

Q. But you still have no guarantee that they are going to follow any particular discharge program? A. No.

Q. Well, what about these small plants, aren't they subject to malfunction? A. Right.

Q. Haven't they had a lot of trouble in the past year with the small plant? A. This is true, from one design to another, but this is one of the reasons that in past years there were many **(161)** failures, but this is one of the reasons why they will require controls to determine whether or not the area device is maintained continuously during the period of time. Once you check that, then the states that have used that method as a requirement are able to go out and check to determine whether or not they are working.

Q. Well, if these small plants and individual plants work so well, why is it that here in the State of Michigan that industries are now required to have operators oversee these treatment facilities that individual industries have, if they work so well? A. When you take an industrial operation, you have got a different kettle of fish. It doesn't take too much of a loss somewhere through an industrial plant to upset the biological picture. We are faced with the same principle as this. If we put the chemicals in the holding tank on the ship and then dump that batch into a small community, it is going to be identically the same as an industrial operation, somewhere along the way, they wouldn't pay attention.

Q. Well, I'm not sure that, again, I have to take issue with you on this dumping, all of this will be in some small selected community, but we have gone over that and I am not going to go into that any further. **(162)** What work have you done on marine sanitation, Mr. Kinney? In designing facilities for ships, none. I am staying strictly to the principles of sanitary engineering, whether the waste comes from on shore or on ship, it's the same kind of bacteria from the body.

Q. If I follow your testimony correctly, the test of your testimony as far as sewage control is concerned is to take sewage and dump it somewhere in the middle of the lake. This is the best treatment you are advocating? A. No, not at all. I think your chances of having that occur with holding tanks are much better. Then if you are going to be held up in port in order to be able to maintain ships, they could take it outside the state line and pump it out. I am speaking of controls that will provide treatment on a continuing basis so that the waste water discharge is no longer sewage but actually treated waste water to meet the standards and the requirements that the State of Michigan would require for on shore facilities.

Q. So then you have no objection to holding tanks in using the on shore facilities if the on shore facilities are properly operated and proper precaution is taken? A. I'm sorry, I don't know what you mean.

(163) Q. Well, what I am indicating to you is, if under proper regulation so that the sewage does not develop secondary septic conditions and so on, that there is no reason to argue against discharging this at fixed points on shore that subsequently takes this sewage and have it treated properly? A. Well, I haven't seen the regulations, but I know of no regulation that would prevent sewage from turning septic.

Q. But, isn't there a way of checking this before discharging—you mean there is no way to determine whether the sewage discharged is— A. If it is septic when it comes ashore, then would you suggest then they couldn't put it in the sewer?

Q. No, I am asking you, supposing it is septic, then what are you going to do with it? A. Well, this is going to be one of the problems of maintaining it if you go to the holding tank. This is why I am suggesting you go the other route and you won't have this problem.

Q. But is this an insurmountable problem? As a sanitary engineer, don't you think it would be solved? A. We haven't seen the solution yet. All I am talking about is the sewage that develops in ships now will be

brought in, in terms of how you would solve—if you are going (164) to have a holding tank, we are going to have to have regulations to require a design of the inside holding tank so that we won't have any solids against the hull of the ship. We are going to have to have it so that you can have positive flushing and cleaning, so that we can have some type of regulated device that will prevent it from being septic, then have the limitation in terms of the bacteria and static material you can put out and the rate at which you can add it to the cities. I haven't seen this.

Q. I think you have answered my question. This is a matter of having a device so treating the sewage in the septic tank so that it doesn't develop a septic condition. Isn't there anything that can be added to sewage to prevent the formation of a septic condition? A. Without creating new problems, none that I know of.

Q. Well, what do you mean by without creating new problems? A. The kind of sewage—the kind of material you would add to sewage to prevent it from becoming septic are the kinds of chemicals that are going to interfere with your biological treatment, your secondary treatment plant you will require the community to put in.

Q. What is this—what kind of a substance would you be putting in there? (165) A. Well, you could use bacteria static, you could use high alkali. You could go to acid.

Q. And when you say it would be interfering with the community treatment facilities, just what do you mean? A. What it means is that you kill off your bacterial growth, which means—or that what you do is you put an overdemand on your chlorine demand; and either way, you are going to have a waste discharge from that secondary treatment plant that won't meet your state standards.

Q. Why, specifically, won't it meet state standards? A. Because the state standards set a requirement on the reduction of BOD's and it also sets a limit on coliform content. It's a bacterial indicator.

Q. So if you were to add any of the substances that you have mentioned, you say that this could not be handled properly by the sewage treatment plants—is that what you are saying—any of the substances you mentioned? A. I am suggesting that you could—if you provide a holding tank on the shore so that it dilutes out, but they won't be able to empty a ship in a hurry.

Q. I see. A. They are going to have to go to a regulated discharge.

Q. It is not an impossible situation. A. But it does do one other thing. It brings more of this **(166)** waste load in to shore which the State of Michigan is trying to clean up.

Q. But, nevertheless, it prevents random discharge from the ship, doesn't it? A. I don't know. I am being very honest about it. I don't know how you are going to provide a control to prevent the pump out of a storage tank in the water.

Q. Well,— A. With that kind of a slug out there, it is going to be worse than this ever was.

Q. But these matters of control are things which have to be worked out by the Water Resources Commission, don't you agree? A. Yes, but, to be very frank about it, as one who has operated a treatment plant, I have seen the difference between the theory of the regulation and the practice of the operation, but what I am driving at, it is a relatively simple matter to set up some controls but they are not so always easily policed.

Q. But they are a little easier to police on shore than they are at some ship running in the middle of the Great Lakes? A. I doubt it.

Q. Well,— **(167)** A. I think if you set the controls on these aerating devices, you will know whether they have been operating or not and you can fine them if they haven't.

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(175)

WILLIAM G. TURNEY, being duly sworn, was examined and testified as follows:

DIRECT EXAMINATION by Mr. Maslowski.

Q. Mr. Turney, where do you live? A. I live in Hazlet, Michigan, just outside of Lansing.

Q. What is your occupation, Mr. Turney? A. I am the Assistant Chief Engineer with the Michigan Water Resources Commission, Department of Natural Resources.

Q. What are your duties and responsibilities as Assistant Chief Engineer? A. Well, I am Assistant Division Chief, and have specific responsibility over a number of sections—a laboratory section, the field survey section, biological surveys, State biological staff, special projects including the watercraft pollution control program.

Q. Now, prior to, or, by the way, how long have you been with the Water Resources Commission? A. Six years.

Q. What were your other responsibilities with the Water Resources Commission prior to becoming Chief Assistant Engineer? A. Well, I was, prior to my present position, I was Regional (176) Engineer in charge of enforcement for the eastern half of Michigan.

Q. As enforcement engineer, what particularly did you do? A. Well, we were engaged in the water pollution control in general as it deals with municipal and industrial waste discharges and any other thing that might affect water quality.

Q. Prior to your employment with the Water Resources Commission, by whom were you employed? A. Michigan Department of Public Health.

Q. In what capacity were you employed there? A. Well, first as a special consultant to the hospital and medical facilities division and assisting them in their licensing program for hospitals and nursing homes; and then as a measurement engineer in the waste water section. Then we were giving consultations to municipalities in regard

to the proper operation of municipal sewage systems, approval of construction plans.

Q. Prior to your employment with the Health Department, who were you employed by? A. Well, I was in private consulting practice with John R. Snell Engineers for six years prior to that.

Q. And what did you do in that capacity? A. General design of municipal and industrial water waste (177) control facilities and solid waste disposal.

Q. Prior to that time what did you do, Mr. Turney? A. I was with the United States Navy, Civil Engineering Corps, for two years.

Q. What were your duties; and responsibilities there? A. I was assistant public works officer at the United States Naval Station in Bermuda.

Q. Do you have any degrees? A. Two degrees, bachelors, masters, in sanitary engineering, from Michigan State University.

Q. Do you have any, or did you take any special courses which relate to sanitation or public health in your work? A. Well, my entire curriculum was based on sanitary engineering and public health courses.

Q. Are you a member of any societies or organizations? A. Well, I am a registered engineer in Michigan, Wisconsin and a number of the Michigan water pollution control associations.

Q. Now, I believe you stated that you had a responsibility in connection with the state program relating to boating control; is that correct? A. That is correct.

Q. What is this responsibility that you have particularly? A. Well, the general supervisory control of the program, the (178) Water Resources Commission is the state agency which has been given the job of enforcing the water pollution control act and we are trying to discharge this obligation.

Q. When did you yourself get into this boating control program? A. It was in 1968. The present law was preceded by administrative rules which were developed by the Water Resources Commission for recreational

watercraft only and this was done in response to a directive request from the governor's office back in 1967; and I became involved in the program in 1968 and worked with it ever since.

Q. What do these rules provide? A. The administrative rules that were adopted by the Commission in June of 1968 provided for total containment of waste on board recreational watercraft with discharge into on shore waste collection and disposal facilities.

Q. Who promulgated these rules? A. The Water Resources Commission did.

Q. What was your enforcement program in connection with these rules? A. Well, there was minimal enforcement, in fact, no field enforcement of the administrative rules because the Legislature had not funded the program as such; and enforcement, as I said, was minimal and we concentrated during 1970, which **(179)** was the first year that the rules were effective, on educational methods to advise the boating public in advance that they should comply voluntarily.

Q. Well, now, since that time, of course, the Legislature has passed Act 167. Are you engaged in a program under that Act? A. Yes, we are.

Q. What does that program concern? A. Well, Act 167 extended the Commission's program of total containment to include the commercial fleet and it also clarified certain wording deficiencies that had been observed in the Commission's rules. But the program was pretty much a continuation of what we had been doing with the recreational fleet, trying to advise the commercial vessel owners and people engaged in the use of these vessels that they did now have a new obligation under the law and tried to work with them to see that they were able to comply with the law.

Q. Now, are these recreational boaters complying with the law? A. It is our estimate that at the end of last season, there was about 40% compliance with no field enforcement; and there certainly have been many other boaters, recreational boaters, who have installed retention systems on board over the winter.

(180) Q. Now, are there pump out facilities to handle these recreational boaters? A. Yes.

Q. How many pump out facilities are there in the state of Michigan? A. According to our latest survey, and this was a written response from the marina owners themselves, indicated over 135 pump out facilities on the Great Lakes shoreline.

Q. Well, now, over what period of time did these pump out facilities develop? A. Well, this has just been within the past few years.

Q. This was from 1968 to 1970? A. During 1969 and 1970, and so far this year.

Q. Now, what have you been doing to enforce the—to enforce Act 167 insofar as the commercial boats are concerned? A. Well, again there has been no field enforcement as such. We have been trying to contact the vessel owners through letters and telephone contact in some cases to encourage them to proceed voluntarily with some kind of a retention system that would comply with the law.

Q. Well, do you have any pump-out facilities for the commercial vessels? A. There are no fixed facilities that are available today, although there were plans under way to provide such (181) facilities, particularly in the Detroit area; and there have been arrangements made with one company who owns barges, floating barges, and he has indicated that he would be willing to transport these barges to any commercial vessel that would have need of pump out and the contents of their holdings tanks and retention systems could be discharged into the barges; and he does have a way to get this material then into the city of Detroit sewage system.

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(182) Q. Well, now, Mr. Turney, you say that there aren't any pump out facilities, but supposing the commercial boats had got busy and put in holding tanks. What would they have done with this sewage that would accumulate in the holding tanks? A. Well, I think there are two things to consider in regard to that question. First of all, the commercial carriers, many times moor and dock

at commercial locations, that is, at factory sites, and a number of the companies will be obligated to put in their own acceptance points which are connected with municipal sewage systems. In other words, it would be more opportune for them to put in their own pump out connections to the sewage system than to come around to a municipal facility.

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(184) Q. Well, let's take this situation: Here we have a ship with a holding tank and it has some sewage. It stops at one of these ports that has primary treatment. The sewage is injected into some line or manhole/ privy, whatever you want to call it. And then the plant operator proceeds to give this primary treatment. Is this the Commission's idea of pollution control? A. Well, that's a very good question, but it's a very critical question also because there is a big difference in discharging waste into a municipal sewage system even though it is inadequate at the present time, and having that waste receive only partial treatment with discharge into the water course of one of the Great Lakes. With that municipal system, we know where the semi-treated effluent is coming out. We protect other uses of the water, recognizing that that pipe is there. It is at a fixed location. We can control the installation of municipal water supply intakes to make sure that they are not located directly below that discharge.

Communities are aware of the discharge locations so you don't construct a swimming beach just below a (185) sewage outfall.

If that same sewage were discharged from ships or boats, you don't know where the discharge is occurring and unsuspecting people that use the water of the state have no protection whatsoever for such waste discharges.

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(186) Q. Well, Mr. Turney, do you have a practical solution where they can take the holding tanks, and I understand that when you put in sewage in the holding tanks, in a very short period of time it becomes septic and when this then can be delivered to the treatment plant

located in some small community and there is an immediate problem. A. No, there is no problem.

Q. What do you mean, there is no problem? You weren't here yesterday. A. There is no problem with accepting sewage, whether it is aerobic, anaerobic, septic or non-septic in a sewage treatment facility. It is practiced throughout the state for septic tank cleaners and haulers to discharge septic tank sludge into municipal sewage systems. This is where the health authorities want this material to go and it is a common practice in almost every city in Michigan to do this, and it causes no problem to sewage facilities. Anybody that says it does just doesn't know what the facts are.

(187) Q. Well, what about the sewage creating a dangerous condition, say, can it create an explosive condition under certain combinations? A. Well, any organic matter that is anaerobic septic could generate explosive gases, methane particularly, and I suppose that if you would hold a match at the right place at the right time that you could cause an explosion. But people constructing these holding tanks must recognize that this might happen, just as we recognize that there are certain hazards with fuel tanks on board vessels. So we design a system, naval architects design systems to make sure that this is taken care of, precautions are taken to make sure we don't have an explosive situation.

And it is a very simple thing in connection with holding tanks, sewage holding tanks, because all you have to do is vent these properly.

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(188) Q. What would you accept besides the holding tank that is currently on the market? A. Well, any system that would preclude overboard discharge. Now, it has been pointed out to us that if—that a strict reading of the law would prohibit the discharge of distilled water and I don't think that the Commission or the legislature or any staff member would be so ridiculous to say that distilled could not be discharged overboard. I don't know why you would want to discharge distilled water after you have gone that far in the treatment process.

But, the object is to preclude waste discharge and any system that could accomplish this would be approved. This could be distillation; it could be recirculation; it could be many other approaches.

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(189) Q. Well, I believe that there was some testimony yesterday that there either are or will be installed some devices aboard ships that provide something equivalent to secondary treatment. Now, what's wrong with a device of this kind as far as sewage disposal is concerned? A. Well, there's two things wrong with that idea. First of all, we know from experience that even the best municipal waste treatment facilities that are under constant supervision twenty-four hours a day have periods of malfunction, breakdowns; and these things always follow Murphy's law, they always happen at the worst possible time; and we are just totally convinced that the same thing would hold true with waste treatment facilities on board vessels. They have a tendency to break down and they do this at the most critical time, just when you are passing by a beach with swimmers on it or when you are passing over a water supply intake.

The Commission discussed this idea at great length when they were considering the administrative rules for recreational watercraft, and the experience **(190)** that we have had in Michigan and that people have had throughout the country just indicates that mechanical treatment systems where there is a discharge of treated effluent cannot be depended upon to give you the protection that you want and need.

Q. Well, there was some discussion concerning a biogest system. Is that a secondary treatment device? A. It would be the equivalent of a secondary treatment system, yes.

Q. Do your comments just made apply to this type of system likewise? A. Yes, they apply to tertiary and four-stage treatment for the same reason—they break down.

Q. Well, how much removal is there, for example, in the secondary system, of, say, suspended solids? A. Suspended solids, ninety per cent.

Q. Well, if you remove ninety per cent of the suspended solids with a device of this kind aboard ship, where is your problem? A. Well, it is not the suspended solids we are most concerned with. I think that we have always been most concerned with the public health significance of waste discharge. And this is measured in terms of the bacterial content in the discharge; and if you remove ninety per cent of **(191)** the pathogenic micro-organisms that might be in the waste to start with, that remaining ten per cent can cause you a great deal of trouble if you happen to be the person that gets the supply of water with those bugs in it. And even a ninety-nine per cent reduction is not considered satisfactory.

Q. Well, if—or, put in this way: So, here in Michigan, we have got a requirement of a holding tank or an incinerating device, but these ships passing through waters under the jurisdiction of other states and these plaintiffs say they are going to be subjected to a piecemeal patchwork system of contradictory state laws. What is your comment on that? A. Well, I would say that they could take themselves out of that position by putting in a total retention system. Holding tanks or retention systems are the ultimate in waste control for vessels and if they put this kind of system on, they are going to be in compliance with every rule and regulation that could ever possibly be devised by any state or national government.

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Q. Well, what, for example, let's take recreational boaters. What is the situation in the Great Lakes states other than Michigan as far as recreational boaters are concerned? **(192)** A. Well, a number of years ago, under the Joint State-Federal Enforcement Conferences for Pollution Control in the various Great Lakes, starting first of all with Lake Erie and the Detroit River, the conferees to these conferences were convinced that pollution from watercraft were problems—was a problem; and so one of the recommendations was that the states get together and come up with some uniform policy to control waste discharge. And out of it has come rules and regulations and

most of the Great Lakes states call for a total retention of waste on board and subsequent disposal ashore. At the present time the states of Wisconsin, Illinois, Indiana, New York, all have similar programs, and the Province of Ontario also.

Q. Do any authorities have similar regulations? A. Well, the Port of Chicago has a no-discharge ordinance that applies to both recreational watercraft and commercial fleet and their jurisdiction extends three miles out from the shore of Chicago. The St. Lawrence Seaway Authority is on record as not permitting discharges in the seaway.

Q. What states have the total retention concept as far as commercial boats are concerned as of today? A. Well, I know that Wisconsin does and outside of that, I **(193)** am not quite sure.

Q. Well, supposing an owner of a commercial vessel installs a holding tank and you have a state requirement in some other state that is something less than a holding tank. Does that put him into a difficult situation? A. No, I don't think so at all. Just because you have minimum requirements, doesn't mean that you can't do a better job, and I am sure that the other states that don't have as strict requirements would be pleased to have a shipper not discharge any waste, treated or untreated, in those state waters.

Q. All right, but there is no pump-out facility in this other state, what does he do with his sewage? A. Well, again, these ships have set runs. They are going back and forth between Toledo and Detroit and maybe the Upper Peninsula and they are coming into commercially owned wharves and pier locations; and much of this could be solved by the companies themselves installing acceptance points, whether it be in Gary, whether it be in Escabana, or whether it be in Detroit.

Q. What is usually involved in setting up an acceptance point? Is this some complicated structure that is just very expensive—what does this amount to? A. This is no big deal. It involves generally, in a **(194)** metropolitan

area like Detroit, the extension of a sewer lead out to a wharf or pier location. If the ship is running in cold weather, there may be some frost protection and so forth that would have to be made, but it is merely a hose connection where the men on board can make a coupling to the acceptance point with a flexible hose and pump the contents of the holding tank into the system.

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(198) Q. Well, essentially, what is the macerator-chlorinator involved, anyway—there has been some talk about that here, that particular device? A. Well, it is—basically it is a grinder that grinds up the sewage into small particles and this is followed by an attempt to disinfect, normally by the use of chlorine or chlorine compounds.

Q. What is the purpose of the chlorine? A. The chlorine is used to try to destroy the pathogenic microorganisms that might be contained in the sewage.

Q. Well, does it destroy them? A. Well, I think it depends upon whether or not the person has put chlorine in the device, the age of the device, whether or not when a person uses a head directly after another person has used it, because to do any effective job of disinfecting with chemicals, not only the amount of chlorine or disinfectant that might be put into the sewage but how much contact time there is with a chemical on the sewage; and if somebody, of course, flushes the unit right after someone else has, the contact time is cut short and the job will not be done.

Q. Well, as I recall some of the testimony yesterday, one of the witnesses for the plaintiffs was very enthusiastic (199) about package plants and didn't seem to think that you needed anybody to look after a package plant, that this was something that would take care of itself pretty well. What is your comment on that? A. My comment is the same as before, it just doesn't happen that way. No matter what the manufacturers tell you, any mechanical piece of equipment is going to require maintenance and supervision, and some more than others.

Q. Well, when I suggested to him that this difficulty had become apparent as far as industrial plants were concerned, he said, well, those are different—an industrial plant is somehow different from what would be aboard ship. What is your comment on that? A. Well, of course, they might be different in size. I don't think they would be much different in concept and I am sure that they wouldn't be different in principle as far as the mechanical systems are involved.

Q. But he seemed to indicate that there was one thing in treating sewage and another in treating industrial sewage, that there somehow was a difference. A. Well, certainly there is a difference between sewage and some industrial waste, but many of our industries also must treat their own sewage and they utilize package (200) plants to do this job.

Q. Well, are these package plants that treat sewage at industrial plants, are they being looked after by operators? A. Yes, especially since the start of this year, the state has a program for certifying industrial waste treatment plant operators.

Q. Now, the plaintiffs' witnesses seem to raise the point that if you had a holding tank, that the sewage in there would be highly corrosive and that you would run into problems because of corrosion in these tanks. What is your comment on that? A. Well, I can imagine situations where you might have some attack on mild steel tankage under certain conditions. This is a very small problem and in my way of thinking, if this is a problem for certain carriers, there are coatings that could be used on the inside of the tanks, or you could go to a plastic rubber lining, you could do any number of things to combat that one small problem.

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Q. I think that some of the testimony was directed towards ballast tanks and the possible use of ballast tanks for (201) sewage. Might not these same tanks be coated with something?

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The Witness: Yes, there will be no problem in coating tanks to prevent corrosion.

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(202)

CROSS EXAMINATION by Mr. Elder.

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Q. Now, the state of Michigan does permit package treatment units, does it not? A. In some situations, yes.

Q. Are you familiar with the town of Wixom? A. Wixom, yes, I am.

Q. That has a package treatment plant, does it not? (203) A. They may have—yes, I think they do.

Q. That is a town of about 1,000 people? A. Uh-huh.

Q. And you said before that the principle that particular package plant would be operating on in the town of Wixom is no different than would be on a vessel? A. Well, the same principles would be involved. I am not personally familiar with the treatment plant at Wixom.

Q. Now, isn't it true also, Mr. Turney, that this plant does not have a continuous operator but only periodic inspections? A. Again, I would not know for sure, but there are cases where the licensed operator might take care of more than one plant or not be on—

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Q. (By Mr. Elder, continuing) Doesn't this really involve only inspection once or twice a week? (204) A. No, it doesn't. It involves a good bit more than just inspection. There are variance degrees, there is sludge to clean out, top of tank scum. There are adjustments to be made in the sludge removal part of the system. There has been a great deal of work done at the National Sanitation Foundation within the past five or six years and if they have observed one thing, it is the fact that the package plants can't be stuck in the ground or stuck in a factory or stuck any place and just left alone to operate themselves. They just do not work that way. You have got to give, generally, daily inspection and routine maintenance several times a week.

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(207) Q. How do you—why is it so foolproof, then, to put into a municipal plant, as in a vessel, when you get breakdowns in municipal plants as well as you get in a vessel? A. Mr. Elder, as I mentioned before, we know where that waste discharge is coming out into the river or the lake from the municipal system and we don't know where your vessels are going to be discharging that untreated waste.

Q. Well, isn't it a fact that you know where the discharge is just as the result of the city or village happening to be at that particular location? A. No, it is not, no. Every city, every municipality and every industry that discharges into the waters of the state has to do this under order of permit, either the Water Resources Commission or the Michigan Department of Public Health, and there have been a number of situations throughout the state where a municipality (208) might more conveniently have discharged into the river at a certain point but they were required to go maybe several miles downstream in order to give maximum protection to a certain reach of the river that was used for other purposes, so it is not just that they happen to be there. There is a good deal of thought put into the design of the location of discharge.

Q. Then how do you justify putting secondarily treated sewage in the lakes from a city or municipality while at the same time prohibiting our vessels out in the lake? A. Well, when you say secondary treatment, all you are saying is that you have reduced the residual amount of pollutants going back into the water; and for (209) municipalities and industries, we know, at least we hope we know, how much residual waste can safely be assimilated by the receiving waters and design perimeters and criteria are established on the basis of the assimilation capacity of the receiving waters. There is still stuff going back into the water and because you remove ninety per cent through a secondary treatment facility on board your vessel, you still got ten per cent going in. So if you had ten times the number of ships, that would be the same as having the raw waste load from one ship going into the same spot.

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(210) Q. Now, you indicated that there are two barges in Detroit and some operator is willing to use them to pump out vessels? A. Yes.

Q. Do you know who that is? A. Yes, David Usher of Marine Pollution Control.

Q. Do you know the size of the barges? A. Six thousand five hundred gallons apiece.

Q. Are you sure of that? (211) A. This is what he has told me.

Q. Well, assume now, Mr. Turney, that a vessel came in with a holding tank of 40,000 gallons. How would you propose to pump it out into those two barges? A. Well, it would require several trips, I imagine.

Q. Now, I believe the fact is that there are 422 vessels of United States registry, and if those vessels all put in holding tanks and came down with 40,000-gallon holding tanks to pump out in two barges, it would be a pretty difficult job, would it not? A. I wasn't suggesting, Mr. Elder, that this is the only acceptance location that we hope to have for the commercial fleet. I am saying that this is the only one that we have available today.

Q. The only one that is present today? A. To my knowledge, yes, it is.

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(214) Judge Edwards: I have a number of questions. Just talking frankly about the problem, Mr. Turney, am I right in deducing that the state's basic attitude in relation to the package treatment proposal for ships is that the ships would not use it and that you couldn't make them do it because of the difficulties of policing?

The Witness: Well, I certainly didn't want to imply that they wouldn't make a—

Judge Edwards: Well, you are implying it when you say that you can use package treatment on land and you cannot on ship. I see absolutely no variation between the two except the fact that the ship is inaccessible to enforcement. Can you suggest a difference?

The Witness: Yes, there is a difference, your honor. The facilities on land, we have a good bit more control over because we have certification requirements (215) for the operators that operate these treatment facilities. These operators are required to make chemical determinations on the waste discharge, coming out of the plant, submit this information to us or to the Michigan Department of Public Health on a monthly basis. So we know pretty much that that system is receiving the proper amount of maintenance and supervision.

Judge Edwards: But your answer is that the difference is that you can police the facilities so that you know that the plants are properly maintained and kept in proper operation on land and you cannot on the ship, as far as you are able to ascertain?

The Witness: Yes, basically that is correct. I would think it would be very difficult for a chief engineer or anybody on board a vessel to take samples of the effluent discharge, for instance.

Judge Edwards: Why would that be difficult? All you have to do is to put a valve some place before the discharge into the lake.

The Witness: But I think that most—most engineers and most people on ship have enough duties without setting up a laboratory to test their discharge. This is what we do have at municipal and (216) industrial waste treatment facilities. They are generally small laboratories, small—even too large in some cases.

Judge Edwards: Operating, for instance, at Wixom?

The Witness: Again, I don't know about the Wixom situation, but the Ford Motor Company plant at Wixom has an operator who has laboratory facilities for that factory.

Judge Edwards: As a matter of curiosity, if a ship elected to violate the law and pumped out its retention tanks in the middle of Lake Huron, how could you stop them from doing that?

The Witness: We probably couldn't, although I think that any vessel owner that went to the expense of putting in a retention system would probably want to comply, and this, there may be—

Judge Edwards: Well, suppose he had a problem in terms of turn around and a pump-out delay on shore base would be substantial, why could he not, assuming the willingness to violate, that you are presupposing, why could he not just run all night through Lake Huron pumping out?

The Witness: We wouldn't have to run all night to do this. You could discharge in a very short (217) period of time.

Judge, I think that maybe, if this is what you are getting at, if a shipper did install a holding tank system and had no place to pump out, this would be the only alternative for him, and I would—if this problem were presented to me, I would suggest that probably the best way to handle it would be to pump out in the middle of Lake Huron temporarily until we had enough pump-out stations to service the vessels. This would be minimizing the effect on the lake, minimizing the threat to public health on a temporary basis.

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(227)

F. CLIFTON LIND, being duly sworn, was examined and testified as follows:

DIRECT EXAMINATION by Mr. Maslowski.

Q. Would you please state your name for the record? A. Yes, my name is F. Clifton Lind, L-i-n-d. Clifton is (228) spelled C-l-i-f-t-o-n, one "f."

Q. Where do you live, Mr. Lind? A. In Wyandotte, Michigan.

Q. And who are you employed by? A. I am employed by the County of Wayne as Port Director of the Detroit and Wayne County Port Commission.

Q. How long have you been Port Director? A. For three years.

Q. And prior to that time? A. Prior to that, I was Assistant Port Director for two years and Port Counsel for six years.

Q. As Port Director, what are your responsibilities, Mr. Lind? A. Well, we are the agency that has the general administration of matters in the ports. Under a state statute, just the general responsibilities of informational service and promotional service of the commerce, overseas commerce in the Port of Detroit and—well, we have some connections with other navigation.

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(229) Q. Well, were any plans made to install any pump-out facilities? A. Well, they are in various stages at the present time. Specifically what was done is we determined from the private operators that it would not be practical to have pump-out facilities at each of the overseas terminals. It would not only be costly but it would (230) constitute a duplication and it would interfere with the operation of the loading and unloading of the vessels. And we looked for a better solution. And it was decided that a more or less centrally located pump-out facility in the Detroit area and one—another downriver, would be much more feasible.

At present a site is being cleared—the ideal site which we found was at the foot of West Grand Boulevard at the location of the former Aquarama Steamship Company dock where the municipal sewer comes within two hundred feet of the dock itself; and an extension there would be not nearly so great an undertaking as it might be in some other location.

We are also exploring at the present time the availability of federal funds and possibly state funds under those circumstances for an extension of an existing municipal sewer.

And in the instance—in this particular instance, for overseas vessels which would not of course be the same thing as you are considering here, we felt that if there was

some other practical use that could be injected, it would be a much better situation and so our plans are for a lay berth at which such functions as clearance from agriculture, immigration, stores may be (231) taken on, fresh water and such things, that would save time at actual berth when the ship is brought to the loading and unloading berth, and under those circumstances, the pump-out would be just one detail and they would not be forced to come in there just for pump-out.

We have one under consideration. The engineers from the City of Ecorse were looking for a site that would be in reasonable proximity to the Nicholson Terminal and Dock. During the process we were informed that the lake carriers felt that the one—that the West Grand Boulevard location would be of very little use. So, in the process of trying to locate such a facility downriver, we are attempting to get one as close as possible to the mouth of the Rouge River so that the lake traffic in the short-cut canal and the Rouge River itself would—so that it would be more convenient for them and it would then be used both for their ships and for the overseas vessels.

This site has not been decided on. Two or three are being considered by the engineering department of the City of Ecorse at the present time.

Q. This facility that would be available to lake carriers, has this, or will be put in connection with whom, now? (232) A. This would be an extension of either the municipal sewer system of the city of Ecorse or of River Rouge. The City of River Rouge—they would most probably be in the City of River Rouge because the first site that seemed to fit the needs was emptying into the River Rouge, City of River Rouge system anyway under an arrangement that the two cities now have for their municipal sewage. So it ultimately, even if it is an intake point in the City of Ecorse, in that particular area at Great Lakes Avenue, the foot of Great Lakes Avenue, in that vicinity it just happens that all of their lines empty into the City of River Rouge sewer system anyhow; but, in any event, it would be a municipal system that would be extended.

Q. Now, have there been any conclusions as to what the charge might be on this type of usage? A. Well, the charge would be in a—I think I got some figures—at any rate, it would be in the same frame of reference as in the municipal system itself and whatever they charge to receive liquids into their systems from—from anyone else, such as the—they have these fellows that go around and pump out septic tanks and a tank truck and then they pump it and they run their trucks to some municipal facility and pump (233) it out, so that there is a charge of so much per gallon that is received. I thought I had those figures but I guess I don't. It was fairly nominal, though, I mean, it wasn't a large charge.

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(235)

CROSS EXAMINATION by Mr. Elder.

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(236) Q. I assume you realize, anyway, it is stipulated in the facts of this case, that on the average a vessel passes Detroit every twenty-nine minutes? A. Yes.

Q. With that frequency of vessel passages, do you think they could all stop at Detroit and pump out at these two facilities? A. They probably couldn't, but they wouldn't want to. I indicated that the overseas vessels are not as acute a problem as the lakers. The reason for this is that with holding tanks they could very easily make their whole circuit through the lake and out without discharging then if they so desired.

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(237) Q. Isn't it true that a lot of docks and plants around the Great Lakes do not have sewer connections? A. Well, there may be around the Great Lakes but not around Detroit and not in Wayne County.

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(238) Q. But even when you do get these pump-out stations at some uncertain unknown date in the future, you would still be going into these municipal plants that

provide only primary treatment; is that right? A. This is the situation at the present time, as I understand it.

Q. So those vessels which now have secondary treatment under Michigan law would be required to come into the pump-out station and pump into a primary treatment plant? A. I—this is a problem that fortunately—I have plenty of problems—this isn't one of them that I have to worry about.

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(240)

RICHARD D. DEWALT, being duly sworn, was examined and testified as follows:

DIRECT EXAMINATION by Mr. Maslowski.

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(241) Q. In what capacity do you work for Ford Motor Company? A. I supervise directly the maintenance and repair of the Ford vessels, which are six in number.

Q. What do these vessels do? A. They carry limestone, iron ore and coal from various ports of the Great Lakes to primarily the Rouge plant in Dearborn.

Q. Do you know what ports they get this limestone at? A. They carry limestone normally from Rogers City. They carry iron ore from Escanaba, Marquette, Duluth, Superior, various times, Port Arthur, Taconite, and Marquette. We also haul coal up from Toledo, Ohio, primarily. We do go to Sandusky, Ashtabula, and some of the other ports.

Q. How large vessels are these, Mr. DeWalt? A. They vary in—the largest is 647 foot long; the smallest is 504 foot long.

Q. How many men do these vessels carry? A. On the average, approximately thirty-two men.

Q. Now, Mr. DeWalt, it is my understanding that Ford Motor Company has installed some facilities to comply with (242) Act 167; is that correct? A. That is correct.

Q. Would you tell us what has been installed? A. Yes. We installed a total retention system for the sewage

on all the vessels. This consists of a recirculating toilet which replace the existing toilets. Then we connected these, or many of them were already connected into a previous sewage treatment plant. Then these discharge into a holding tank which we pump ashore when we get into the Rouge plant.

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Q. Now, what did it cost per vessel to install these? A. I can only give you an accurate estimate at this time because we don't have all the bills in for the materials, et cetera, but it would approximate one hundred and ten thousand dollars for the six vessels.

Q. So this is less than twenty thousand per vessel? A. That is correct.

Q. How long did it take to install these facilities in your vessels? (243) A. We—from the time we accumulated the material, it took us approximately four weeks to complete the job.

Q. This is on all the vessels? A. That is correct.

Q. Who did the installation work? A. We did much of the installation work ourselves—I am talking about the crews on the vessel. We had outside contractors do the other work, local outside contractors.

Q. Now, how large is this system that you have installed—what size is it? A. Well, if you are talking capacity, we tried to pump out no more than bi-monthly so we attempted to arrive at a good guess as to the size tanks we would need and the usage we would get, so we installed generally a one-thousand gallon tank forward and a one-thousand gallon tank aft.

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Q. Has your installation been approved by the Water Resources Commission? (244) A. Yes, it has been.

Q. Now, where will you be pumping out your tanks? A. Well, we contacted a number of local septic tank and sewage removal people and they came in and looked at the installation. We went out for bids and we have a gentleman who comes in with a—well, it is more or less a standard septic pump-out truck they use for septic tanks.

He comes in as we call him and he pumps the tank out and then he dumps it into a sewer within the Rouge plant.

Q. Now, do you know what his charge will be for that service? A. Yes, I can tell you approximately. We don't —we are still in the negotiating stage. It will be somewhere between fifty and seventy dollars per ship, per pump-out.

Q. This is for a two-week period, you indicate? A. That is correct, yes.

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(245)

CROSS EXAMINATION by Mr. Elder.

Q. Mr. DeWalt, you indicate that you have operated some six vessels? A. That is correct.

Q. Is one of those vessels The Henry Clay Ford? A. No, sir. One is the William Clay Ford. And Henry Ford II.

Q. Well, I meant the William Clay Ford. A. Yes.

Q. What type of facility did you have on that vessel before you went into this installation? A. We had American Ship System on that vessel.

Q. So you already had the piping in. The tanks were already there? A. That is correct.

Q. And so what you are using for holding tanks are the tanks that were there from this other system? A. That is correct.

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(247) Q. So, in effect, what has happened here is you have taken out a waste treatment system and put in this—changed it into this holding tank system and now are pumping it into a municipality that has only primary treatment; is that right? A. Yes.

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(248) Judge Edwards: I am clear that your system (249) does not use the holding tanks for either the water from bathing or from the galley?

The Witness: That is correct, yes, sir.

Judge Edwards: Those would be the primary additional water usages, would they not be?

The Witness: Yes.

Judge Edwards: The state of Michigan has indicated approval of your system as being within its interpretation of its state law requirements under Act 176?

The Witness: Yes, sir.

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(250)

JOSEPH V. COOK, being duly sworn, was examined and testified as follows:

DIRECT EXAMINATION by Mr. Maslowski.

Q. Where do you live, Captain Cook? A. I live in Okemos, Michigan, a suburb of Lansing.

Q. Who are you employed by? A. I am employed by the Bureau of Transportation of the Michigan Department of Commerce.

Q. In what capacity? A. As Director of the Port Division which consists of myself at this time.

Q. Prior to that time, who were you employed by, Captain? A. Immediately prior to my state employment, I was Port Director of the Port of Muskegon for nine years. Prior to that, I was a master of ocean vessels and port captain of a company on the east coast, prior to my employment in Muskegon.

(251) Q. Very well. Now, have you been connected with Act 167? A. After the passage of Act 167 the Water Resources Commission staff requested my assistance in attempting to implement the provisions relative to commercial vessels. This is an area that is part of my responsibility in state government.

Q. What did you do to implement that? A. I think our first approach was to attempt to evaluate the maritime components of the Great Lakes system, but it did appear at that time and still does appear that there are specific problems facing each of the separate components,

the overseas being one component and their operating pattern in Michigan harbors are restricted to some nine terminals in four different harbors. The domestic lake vessels can be looked at from being—is composed of two principal components—the proprietary, so-called proprietary owners who own their own vessels and in turn own the cargo and their own docks. They present one area for a specific type of solution. The itinerant or the carrier that has no set pattern or no point-to-point operation as characterized probably by the bulk of the lake carriers, has not been able to find a practical or even a temporary solution to that component.

And, of course, as far as the smaller craft as (252) towing boats, dredges, and non-descript vessels, they cannot be considered recreational watercraft and they, of course—there are a varying number of possible solutions to the full witholding on that class of vessel.

Q. Specifically, what is it you have been working with? A. My principal efforts have been in conjunction with the overseas component for one reason that appeared to offer some immediate solutions to the question of full retention, although at this time they are only temporary solutions.

Q. What are these solutions? A. Since several years ago when the city of Chicago enacted full retention in the Port of Chicago, a number of the overseas carriers used the monomatic system or portable retention system for subsequent disposal ashore; and over the years that system has developed that the vessels can acquire these units in a Canadian port, use them in any restricted area in the Great Lakes and then return them for disposal on their return.

Again, that system is practical only because the overseas vessels have a relatively fixed pattern of operation. They come in through the seaway and they go back out through the seaway and spend a limited period of time in Michigan ports and Michigan waters. So it (253) does appear to offer a temporary solution until such time as we are able to evaluate the pump-out needs of the fleet and

develop the necessary facilities to accommodate their particular requirements.

Q. Are you continuing to work on such evaluations? A. Again, the overseas carrier is in a slightly different position in that the overseas companies employ agents to represent their interests in the various ports and the agents have been requested to notify the vessels of the provisions of Act 167 and request information from them on what system they are using currently, what system they intend to use, and what shore facilities might be necessary for immediate or long-range use. This, again, is, in my opinion, necessary to make a full evaluation of the needs—

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A. (Continuing) In my opinion, to make a full evaluation of the needs of the fleet, at the same time we plan shore facilities for pump-out use.

Q. Have you made any surveys as far as pump-out facilities are concerned? A. By surveys—

(254) Q. Well, have you inquired of anyone as to pump-out facilities, any municipalities? A. Well, again looking at the overseas component, the principal ports for this type vessel activity has been the Detroit and Bay City-Saginaw and Muskegon and have at this point reviewed with the municipalities the provisions of Act 167 and have investigated possible sites that could be developed for disposal. In each case, some site was developed that appears to have some potential use for this purpose.

Q. You are talking about what location now? A. Bay City, Detroit and Muskegon.

Q. This has been developed with whom? A. With the city representatives of the Sewer Department and/or the representatives of the city government.

Q. Now, how would some of the smaller municipalities plan to handle this problem of discharge, say, a large quantity of septic waste from a holding tank? A. The problem of possibly introducing a large quantity of raw sewage into a municipal sewage system was recognized by the municipal sewage plant operators. However, they did

say that this should present no problem because it is quite possible to design a receiving tank at the pump-out location and then that tank would be subsequently (255) pumped into the sewage system as the system could handle it or as it was needed to empty the tank.

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(256)

CROSS EXAMINATION by Mr. Elder.

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(258) Q. Are you acquainted with Captain Aspin? A. I am.

Q. Can you tell us who he is, please? A. He is in charge of the Marine Operations Department of the Shipping Federation of Canada which federation is a—represents the majority of the overseas carriers that serve the Great Lakes.

Q. Didn't you write him a letter on the 20th of January of this year, 1971? A. I believe I did.

Q. And at that time didn't you tell him, and I quote: At this time pump-out facilities for vessels, sanitary wastes or oily bilge waters are not available in any Michigan port? A. That is correct.

Q. Didn't you then also write this, quote: The Water Resources Commission's opinion is that any commercial vessels moored or operating in Michigan waters, in order to be considered complying with the provisions of Act 167 should be equipped with some sort of permanent onboard retention system or incinerating (259) device which will effectively prevent overboard discharge of sewage wastes. Liquid galley wastes and wash water are not regulated under the provisions of the act. The Commission, however, recommends that commercial vessel operators and owners design holding tanks and other self-contained systems with a capacity which would enable the retention of these wastes as well since other jurisdictions on the Great Lakes may require their retention. A. Well, that was a direct quote from the letter from the Water Resources Commission.

Q. But it is the recommendation of the Water Resources Commission that these tanks include not only just human waste but all the galley waste and wash water and so forth? A. It was a recommendation at that time although the act does not specifically include galley waste or wash water under the full retention concept.

Q. Then you don't consider galley and wash water a noxious substance? A. It's not my determination of whether it is noxious or not. It is a question of what the law says and the interpretation of the Commission and who is responsible for making this determination.

(260) Q. I think you further indicated in your letter that you would accept on a temporary basis portable sanitation system as long as they did not discharge overboard? A. That is correct.

Q. And that is these heads or these portable red heads that you put on deck? A. Whatever system might be available that would serve this purpose.

Q. Now, isn't the average voyage, or, say, a combination tanker bulk cargo carrier of foreign registry, assuming she is coming here with steel, coming into Cleveland with steel from the seaway, then goes up to the head of the lakes for a load of grain and then back out through the seaway, would be about twenty-eight days before she got back there, wouldn't it? A. Could be that long.

Q. And assume she had a 35-man crew, isn't it true that the capacity of one of these Johnny on the spot or red heads or whatever you want to call them is 30 man days? A. I am not certain of what the life of this equipment is or whether the life is based on time or usage.

Q. Well, assume it is 30 man days, then, Captain, with a crew of 35, or 30 man days means one man for 30 days,— **(261)** A. Uh-huh.

Q. Assuming with a 35-man crew a 28-day voyage, this means to have total retention, you would have to put one john on the spot for each man on deck? A. That would be if I were concerned with total retention throughout that voyage. However, I am concerned with only Michigan waters since that is what the Michigan law per-

tains to. Now, that vessel in going from Cleveland to Duluth will not be in Michigan waters for 28 days.

Q. Well, now, if total retention is a valid principle, isn't it just as valid elsewhere as in Michigan? A. I would think it would be valid, but at this point Michigan is the only state that has such a statute.

Q. So that if they don't retain in waters outside of Michigan, discharge in Wisconsin, Ontario, and so forth, it is all going to come back into Michigan anyway, isn't it? A. It will not be guaranteed to come back to Michigan, it depends again on the currents, winds, and other factors. It could come back to Michigan or it could go elsewhere.

Q. I take it from your testimony, Captain, that you have not made any evaluation or your planning has not reached the stage of the ordinary commercial vessels on the Great Lakes? **(262)** A. That is correct.

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(268)

JOHN E. VOGT, being duly sworn, was examined and testified as follows:

DIRECT EXAMINATION by Mr. Maslowski.

Q. Where do you live, Mr. Vogt? A. In Lansing.

Q. And who are you employed by? A. The Michigan Department of Public Health.

Q. In what capacity? A. Chief of the division of engineering.

Q. Prior to that, or, how long have you been employed as chief of the engineering division? A. Since February of 1960.

Q. Prior to that time, what did you do, Mr. Vogt? A. I was a sanitary engineer with the Department of Public Health.

Q. How long was that duty? A. From 1940 to 1960.

Q. And prior to that time? A. I was with a county health department in Michigan, in Mt. Pleasant, Isabella County Health Department, as a sanitary engineer.

Q. How long was that employment? A. Since I got—since I graduated—from the time that I (269) graduated in 1937.

Q. Do you have any degrees, Mr. Vogt? A. Yes.

Q. What are they? A. A B.S.C.E. with Sanitary Engineering options from the University of Iowa and a Masters in public health from the University of Michigan.

Q. Now, getting back to your present employment, what does your present employment consist of? A. It involves the administrative direction of the environmental health programs of the State Health Department, which includes the supervision of public water supplies, supervision of municipal sewer systems and sewage treatment plants and three other sections, one on solid waste management, another one on food sanitation and another section involving a general environmental health program, including the licensing of septic tank cleaners, the licensing of trailer parks and agricultural labor camps.

Q. Have you then been connected with the Michigan Water Resources Commission? A. Yes, I represent the director of Public Health as—on the commission.

Q. Do you so represent him at the present time? (270) A. Yes, sir.

Q. Have you ever been an officer of the Michigan Water Resources Commission? A. Yes, I was chairman for two years.

Q. What years were those? A. Well, I am just the immediate past chairman. It was in 1969 and 1970.

Q. Well, in connection with your work with water supplies, for example, what specifically does your division do? A. We review the plans for all new water supplies and addition or changes to existing supplies, and the plans for these changes must be approved before construction begins. And then we also carry on a surveillance program which includes the actual field inspection of the supplies; also involves the training of water treatment plant operators; the review of monthly reports on the treatment.

Q. Have you given any consideration to discharges from commercial vessels as far as the water supply is concerned? A. Yes, we do.

Q. Have you reviewed such discharges in the light of Act 167? A. Well, we—in the light of 167, if that act was (271) complied with, then we feel that this would provide additional protection of the raw water to each water treatment plant so that this would—this would be an additional safety factor as far as the quality of the treated water is concerned.

Q. Well, how would this provide such safety factors? A. By virtue of the fact that without overboard discharge of sewage, there would not be the possibility of any of this waste, any of this sewage getting into the raw water intake of a water treatment plant.

Q. Well, from a public health standpoint, can these discharges affect anything else? A. Yes, from the standpoint of swimming, I feel that certainly they can be hazardous to people swimming.

Q. Well, you have heard the testimony here that some of these ships do have what is known as secondary treatment, that there has been argument here that ships should be allowed to have secondary treatment, that they should not be restricted to holding tanks. What is your comment on this? A. Well, I think that there is quite a difference here between, let's say, a land based secondary treatment plant and a secondary treatment plant, so-called, on a marine—on a vessel, even though they might both (272) put out the same degree of treatment, from the standpoint—one standpoint that was testified to earlier, that is, in the case of the municipal plants, the point of discharge is known and the fact that swimming does not take place within close proximity to the point of discharge; furthermore, a water supply is not taken close to a point of sewage plant effluent discharge; whereas, with the discharge of a secondary treatment waste from a watercraft or from a vessel, these are obviously mobile and they are in different locations and in the case of swimming, for example, let's say, in Lake St. Clair where there is considerable swimming taking place, the discharge from even a secondary treatment plant on board a vessel could still be discharging waste that could be hazardous to the swimmers, even if ninety per cent of the pollutants were re-

moved, including, say, bacteria, there still could be ten—sewage frequently has a bacterial count of one hundred million, you could still have ten million bacteria discharged into the lake. And this could include pathogens, that is, disease producing organisms.

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(273)

CROSS EXAMINATION by Mr. Elder.

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Q. Are you aware of the rules of the road that require small boats to keep out of the way of large ships which indeed can navigate only within the channel? A. I didn't say that they were swimming in the channel, but the fact is that currents and winds can certainly blow pollutional discharges all over in different portions of the lake so that if people are even in proximity they could be swimming in polluted waters.

* * * * *

(275) Q. (By Mr. Elder, continuing): All right, now, Mr. Vogt, I want you to assume that we are going to put a holding tank on a vessel. You have indicated this would be a good system. And we will assume you have got a tank, like so. Now, how would you keep that tank, say you were going to store it for ten days—how would you keep it from getting septic? A. I wouldn't make an effort to keep it from going septic.

Q. Why not? A. Why so? There is no need for it.

Q. Wouldn't that contain methane gas? A. Yes.

Q. Wouldn't that be a hazard? A. Of course, that was covered this morning in other testimony and it was pointed out that proper design could properly vent that so that there would be no problem.

* * * * *

(277) Q. All right. Now, let's take another tank. This is again a side view of a tank. We again put air into the tank. All right, we have our fluid coming in here. Now, in addition to this, Mr. Vogt, we put in a series of

baffles, keep this stuff percolating, then we have a flow-back device to pick up these solids and bring them back and recirculate them. Then we have an overflow here where the discharge comes off. And we have one of these typical package plant systems, haven't we, for waste treatment? A. Well, that is the general flow-through design for a so-called package type sewage treatment plant.

Q. Now, when this water comes off, how is it broken down, or what's its components? A. Well, that includes a lot of solids and it includes bacteria and it includes all of the chemicals, toxic or otherwise, that might be in the raw waste, or even the treated waste, as it goes through.

Q. But this comes off as secondary treatment now. A. No, I wouldn't say so. It is aerated sewage.

* * * * *

(280) Q. I ask you to assume that this is a secondary plant putting forth the standards that we had discussed and I just ask you a simple question: Isn't then the effluent, the coliform count, the same as the water quality standard you set for body contact sports? A. I can't answer that yes or no.

Q. No? A. Because the standards there indicate that the water in the stream must be—must not exceed one thousand coliforms per 100 cc. Now, the quality of water coming out of one of these sewage treatment plants, your package plant, is not the same kind of water because in addition to the thousand coliforms per 100 milliliters, there are also some other types of organisms that are in there that could be highly dangerous and they are not tested for,—

Q. What do you mean by that? A. —such as the virus of hepatitis, such as the typhoid **(281)** organisms. The coliform index is only an indication of the bacterial population in there. It doesn't—it doesn't tell you that this is all of the bacteria there or, in magnitude, total magnitude, or in the quality of the bacteria. There could well be other types of bacteria there that are not tested for in this coliform index.

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(283) Judge Edwards: What is coliform?

The Witness: Sir, it is a type of bacteria.

Judge Edwards: Well, is it a specific type?

The Witness: It is specific, yes, sir. It is a specific type of bacteria that can be tested for. There are the types of bacteria that are commonly found in the warm blooded animals, in man and dogs and cats and otherwise, so that if this type of organism is found in, let's say, in a treated water (284) supply, then that indicates that there has been some source of contamination got into the water supply subsequent to treatment, but it is a specific type of bacteria that can be tested for routinely and inexpensively.

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(285) Judge Pratt: May I inquire, if I may, please.

Assuming you have a section of beach. You tested it and it shows a one thousand coliform count.

The Witness: Yes.

Judge Pratt: Then a ship goes by and discharges one thousand gallons of fluid which also has a one thousand coliform count. Does that merge, does it add, does it mean that if you take a sample of it right at that point, you would have a two thousand coliform count?

The Witness: Not necessarily, but you (286) could very well, your honor, have a different population of the remaining bacteria in that sample. In other words, the discharge from the vessel with one thousand coliforms could—the rest of the bacteria in that waste could be quite different from the rest of the bacteria on this beach with one thousand coliforms.

Judge Pratt: You have a difference in the—

The Witness: Because of the—because of these wastes coming directly from humans. You see, the thousand on the beach might be from humans, it might be from dogs, it might be from cats or run off from the soil, but the thousand coming from the—or in the waste coming from the vessel would be all from

human origin and we would know that there were other human bacteria in that—in those wastes, and the remaining human bacteria could well be some of the intestinal bacteria such as hepatitis, typhoid, dysentery—

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(290)

JOHN ASPIN, being duly sworn, was examined and testified as follows:

DIRECT EXAMINATION by Mr. Elder.

Q. What is your occupation, Captain Aspin? A. I am the Director of Marine Operations for the Shipping Federation of Canada.

* * * * *

(291) Q. What is the Shipping Federation of Canada? A. We are a representative association of owners, both domestic and foreign.

Q. What is your sea experience, Captain? A. I went to sea in 1952 and reached the position of command in merchant marine and I was seven years in—as a reserve, with both the British and Canadian navies in submarines.

Q. Now, Captain Aspin, what has been your experience with respect to placing these Johnny on the spots, and so forth, on these ships coming into the Great Lakes? A. My personal experience has been—has been very limited. But, in the meantime, I have attempted to advise owners that one of the remedial temporary measures until we get some clearcut, hopefully, federal legislation, that the Johnny on the spot is a measure that could in the past comply with the Chicago municipal regulations.

Q. Now, is that device used throughout Michigan waters? A. The Michigan legislation was sprung upon us rather at the last minute, but in an effort to comply until we know (292) exactly where we are going, I confess we are rather bewildered at the moment, the owners are attempting to adopt, if they don't have any equipment on board, Johnny on the spots as a temporary measure.

Q. Were you using these only in ports, or would you be able to use these all the way through, through all Michigan waters? A. Well, the demand upon Johnny on the spots, and the difficulty in habilitating them on board, necessitates that you not only use them for a limited period, but in order to attempt to abide by the legislation, they would only be used in Michigan waters.

Q. What is the status of pollution legislation on the St. Lawrence Seaway? A. They both, the St. Lawrence Seaway Authorities and then its United States counterpart, the St. Lawrence Seaway Development Corporation, regulate in their—contained in their regulation is a passage to the effect that vessels transiting the St. Lawrence Seaway should be prepared to comply with the regulations that exist in the waters into which they intend to frequent or transit.

* * * * *

Q. Now, what is the situation in Canada itself as far as (293) the Great Lakes are concerned? A. As far as the Great Lakes in the whole of Canada, if I may say, we have, after recirculating draft regulations, arrived at what the industry feels is this rather stringent set of regulations specifying the quality of effluent which a vessel is permitted to discharge providing it has on board the equipment laid down in these draft regulations. It is more the quality of the effluent which the Canadian government is concerned with and we are, although stringent, we are prepared to act and abide by these regulations; but I think, in all sincerity, the owner, the ship owner wishes to feel that before he adapts and goes through the expense of adapting his vessel to meet these regulations, that the equipment which he adopts is going to suffice for all the waters in which his vessel, his particular vessel or fleet of vessels is going to trade.

* * * * *

(294) Mr. Maslowski: Your honor, may I ask a few questions concerning this proposed exhibit?

Judge Edwards: Yes, you may.

VOIR DIRE EXAMINATION ON PROFFERED EXHIBIT.

By Mr. Maslowski:

Q. Captain, who were these regulations developed by? A. The Canadian government, the Ministry of Transport.

Q. Have there been any hearings on these regulations? A. Yes, there have, but not in the same sense as you have federal hearings, but they have and they have been circulated during the strict comment.

Q. But the industry has not commented on these, I take it? A. Yes, they have most certainly. They have been circulated since 1962; and that is the fourth and supposedly final draft.

Q. You mean they have been in circulation for eight years? A. Yes.

Q. They haven't been adopted yet, have they? A. No, they have—

Q. I say, have they been adopted? (295) A. No, they have not.

Q. When will they be adopted? A. Our bill C-2, which is our act to amend the Canadian Shipping Act, received force of law on the 30th of March of this year.

Q. What does that mean? A. These can now be given force of law themselves as regulations. And I must sort of backtrack slightly. The garbage section of those regulations received force of law and are now in being; and they received force of law on the 14th of—I think on the 14th of April, give or take a day; and we are waiting, as I have—and I have correspondence to this effect—the sewage regulations would have gone into force. However, the Canadian government accepted the industry's joint proposal, and I might say this includes the American Institute of Merchant Shipping, the Lake Carriers Association, to strive for uniformity in federal regulations between Canada and the U. S., and they have held off putting those or giving the sewage section of those regulations force of law until after a meeting arranged between Mr. Jensen and Mr. Volpe to be held in Washington in June of this year.

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(296) Q. Captain, I hand you a document marked Plaintiffs' Exhibit 23. Would you examine that and tell us what it is, please? A. Yes, this is a communique of intent, a joint communique of intent between Canada and the United States, and the outcome of ministerial meetings on Great Lakes pollution. And the particular intent to which I just referred was that Messrs.—Mr. John Jensen, Minister of Transport, and Mr. Volpe,—

* * * * *

(297) The Witness: I beg your pardon. The statement of intent, joint intent being a communique from Mr. Jensen, the Minister of Transport in Canada, and Mr John Volpe, the Secretary of Transportation; and it is the result of a ministerial meeting on Great Lakes pollution dated the 23rd of June, 1970. And the specific clause to which I previously referred is that they both—they state that in both countries legislation exists for the regulation of waste disposal by commercial vessels and pleasure craft and the ministers concerned have agreed to achieve compatible regulations.

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VOIR DIRE EXAMINATION ON PROFFERED EXHIBIT.

By Mr. Maslowski:

Q. Captain, I direct your attention to Part I, Sewage (298) Disposal, particularly No. 7. I will read that to you and see whether or not I am reading it accurately: Notwithstanding Sections 5 and 6—Sections 5 and 6 being certain sections that provide for coliform numbers and so on—it says: The Minister of Transport may designate waters into which the discharge of sewage is prohibited. Is that right? A. That is correct.

Q. So that would mean that if the Minister of Transport felt he could tell these boat owners, you can't discharge any sewage in these waters period; right? A. This is what I read from it.

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(301) Judge Pratt: My understanding was that even if it were treated, they could still specify areas where no discharge can be made.

May I see that exhibit, please?

Mr. Maslowski: Yes, it is specified right in here, your honor.

The Witness: That Section 5 is—implies that—

Judge Pratt: Do you understand that to mean regardless of whether it is treated or not, that the Minister of Transport may designate waters into which (302) no discharge can be made at all?

The Witness: Yes. He could have the power, regulatory power to designate areas where no discharge would be possible.

Judge Pratt: That is true in Chicago, apparently; is that right—no discharge can be made at all in the Chicago area?

The Witness: Yes, this is true. I am not an expert, I am afraid, on the Chicago regulations. They are flexible.

* * * * *

(303) Judge Pratt: What I am trying to get at, Captain, is this, that if each jurisdiction retains the right and is given the authority to designate areas in which no discharges can be made, then what difference does it make whether you have uniformity of types of chemicals or machines or anything else to prepare sewage for discharge that has only a certain count, the uniformity is lost then, isn't it, if each jurisdiction can set aside given areas, it doesn't matter what kind of a device you have aboard ship. If you can't discharge on the Canadian side of the Detroit River, for example, then it doesn't do you any good and there is no uniformity, is there, unless you have a holding tank and then you pump out?

The Witness: (Gesturing) Yes, well,—yes, unless you did have a holding tank and—but it—if I may say so, this is a—it is like bringing about a (304) fait accompli. There is no provision for the

owner to adapt to the provisions of the legislation, there is no need then.

Judge Pratt: I am in agreement with you, Captain, but the point is that, apparently in these regulations, and this is true of the federal statute, as a matter of fact, upon application to the proper department, a state may, with their permission, designate certain areas where no discharge can be made period. What I am suggesting to you is that if that is the uniformity, then you lose the uniformity—

The Witness: Yes.

Judge Pratt: —because if each jurisdiction retains that, then each ship is going to have some kind of holding tank. Now, it depends on the number and extent of the area as to how big the holding tank has to be.

The Witness: This is correct, what the ministry implies is in Section 5, what is really intended is. I know that.

* * * * *

The Deposition of RALPH PURDY, taken on behalf of Plaintiffs, before Katherine Joann Hyde, Notary Public, at Seven Story Building, Lansing, Michigan, on Thursday, April 8, 1971, at the hour of 10:30 o'clock A.M.

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(3)

EXAMINATION by Scott H. Elder, Esq.

Q. Would you state your name? A. Ralph W. Purdy.

Q. And where do you reside? A. Lansing, Michigan.

Q. What is your occupation? A. Executive Secretary of the Michigan Water Resources Commission and deputy director of the Department of Natural Resources.

Q. And how long have you held that position? A. I have held two positions for approximately two years.

Q. That is deputy director and executive secretary? A. Director since March of '69.

Q. And prior to holding these positions, Mr. Purdy, what was your occupation? A. I have worked for the

Michigan Water Resources Commission for 21 years in various occupations, stream inspector, sanitary engineer, regional engineer, chief engineer, and now executive secretary.

Q. And what is your educational background, Mr. Purdy? A. I am a chemical engineer registered as a Professional (4) Engineer in the State of Michigan.

Q. From what school did you graduate? A. Michigan State.

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Q. Do you have specific jurisdiction of municipal waste ~~treat~~ing systems? A. The Water Resources Commission, as I understand the statute, has overall responsibility with respect to municipalities. It shares certain functions with the Michigan Department of (5) Public Health. The director of the Department of Public Health has responsibilities, specific responsibilities, and the approval of construction for and supervision and operation of treatment plants that serve the public.

Q. If I understand you correctly, then, you do exercise direct control over municipal waste treatment systems? A. The Water Resources Commission has overall responsibility for the fall of effluents in the surface waters of the state.

Q. Did you set the standards of those effluents? A. The Commission sets the standards and advises the Michigan Department of Public Health on the effluent quality that the municipality should meet.

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(7) Q. Now, you speak of quality. How do you define—how do you spell it out? In what terms, "B.O.D." or what? A. The quality is normally spelled out in concentration and pounds of biochemical oxygen per day. It may spell out a concentration of—of ammonia, unoxidized ammonia. It spells out normally suspended solids concentration. It spells out a level of coliform and in certain other special circumstances may spell out phenolic concentration, or any (8) other substance that may be anticipated in the effluent and, in addition to that, there is a normal

requirement that the facility be able to remove a minimum of 90 per cent of total phosphorous discharge to the treatment facility.

Q. Well, now, what is primary treatment? A. Primary treatment alone removes the solid that will settle in a tank, designed to provide a detention time of so many minutes or so many hours.

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Q. What is secondary treatment? A. The conventional definition of secondary treatment means a step—a second step beyond primary treatment. Now, in some instances, people consider chlorination to be a secondary step; however, this is not the generally accepted definition of secondary treatment. Secondary treatment, in the past, has normally—the installation of facilities (9) that would provide, through biological means, additional removal of suspended solids and other oxygen consuming substances that are subject to biological oxidation. In addition to that, secondary treatment of that type will provide some removal of the coliform.

Q. Can you tell me what secondary treatment is in terms of "B.O.D." and so forth? A. Again, through engineering design, this secondary treatment plant can be designed to provide for a broad range of removal. On the average, though, I would expect that you could say that you would anticipate 90 per cent removal of the five-day biochemical oxygen demand, equal removal of suspended solids. I would not guess on the total coliform removal since again, this is not really effective removal of total coliform.

Q. Well, does secondary treatment cover a range, then, anywhere from say the figures you gave me on primary treatment up to the figures you just gave me on secondary? A. Not normally. The range of, say, biochemical oxygen removal would be, say, from 70 per cent up to 95 plus per cent.

Q. You would consider that secondary treatment? A. Yes.

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(10) Q. What type of treatment is the municipality of Detroit now providing? A. Detroit, at the present time, is providing primary treatment, with the addition of ferrous chloride to eliminate the soluble phosphorus from being a nutrient source and it is providing chlorination of the primary treatment plant effluent.

Q. Do you enter any orders against municipalities requiring them to provide a better treatment of secondary treatment? A. Yes.

(11) Q. And what is the situation with respect to Detroit? A. Detroit now is under a stipulation. This is an agreement signed voluntarily between the City of Detroit and the Water Resources Commission to provide for a higher degree of treatment. This particular stipulation sets forth specific restrictions with respect to biochemical oxygen demands, suspended solids, phenols, coliform, total coliform; specifies a degree of phosphorous total—pardon me, soluble phosphorous removal. It may include other specific restrictions.

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(12) Q. When do you expect Detroit will have full secondary treatment? A. I expect Detroit to—under its present schedule, to be meeting the terms of the Commission's requirements by late '73 or early '74. I am not quite sure about that date.

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(17) Q. All right. Thank you. I have here a map of Michigan. I should have brought a navigation map, but I didn't. Now, Mr. Purdy, we have already discussed Detroit. What type of municipal treatment do they have in (18) Port Huron, Michigan? A. Port Huron, at the present time, has primary treatment. Pardon me, with chlorination.

Q. Is Port Huron under any specific order? A. Port Huron is one of the communities in Michigan that has signed a voluntary stipulation with the Water Resources Commission and it calls for improved treatment including phosphorous removal and control of discharges from combined sewers.

Q. When will that be completed? A. Again, I have to search my memory on this. This is a fairly recent one. I believe it calls for construction to be initiated late this year and for the facilities to be completed and placed in operation in 1973.

Q. '73. All right. How about Bay City? What is the treatment in Bay City? A. Right at the moment I can't tell you because they are very close to having completed secondary treatment facilities with chlorination and phosporous removal.

Q. Bay City, then, doesn't have secondary treatment yet? A. It may have, and it may not. It may have primary treatment of chlorination. It may have secondary treatment, phosphorous removal and chlorination, because those facilities were placed under construction last year.

(19) Q. How about Alpena? A. Alpena has primary treatment and chlorination.

Q. Any order outstanding on Alpena? A. I don't believe so at the present time, except—no, I don't believe so.

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Q. All right. Well, how about Mackinaw Island? A. Mackinaw Island is under an agreement with the Commission to provide waste treatment at those facilities, and those facilities were bid in December and it is my understanding that they are asking for rebids and construction to be official in the spring of this year.

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Q. How about Sault Saint Marie? A. Sault Saint Marie, at the present time, has primary treatment and chlorination.

Q. Any order outstanding on Sault Saint Marie? A. Not at the present time, although the Commission has held conferences with Sault Saint Marie and has notified Sault (20) Saint Marie of their intent to require phosphorous removal in addition to primary treatment and chlorination, and plans have been prepared for that. They have been presented to the Water Resources Commission and have been approved on behalf of the Water Resources

Commission. They were—since this is on interstate waters, it requires approval of the federal agency in addition to the Water Resources Commission. They were sent into the federal agency, I believe, in December of 1969. The federal agency has not acted on that yet.

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Q. All right. Now, how about Manistique? A. Manistique has primary treatment and chlorination at the present time.

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Q. Escanaba? A. Escanaba has secondary treatment and chlorination at the (21) present time, and it is under an agreement with the Water Resources Commission to provide for phosphorous removal in addition to the secondary treatment of chlorination.

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Q. How about Marquette? A. Marquette has primary treatment and chlorination at the present time.

Q. Any order outstanding on Marquette? A. Marquette, I believe, has a stipulation with the Water Resources Commission to provide a—provide for secondary treatment unless it can be demonstrated that a lesser degree will meet the water quality standards at that point, and in addition, it must provide for the removal of total phosphorus.

Q. All right. What about Muskegon? A. Muskegon, at the present time, has primary treatment and chlorination.

(22) Q. Any order outstanding on Muskegon? A. Muskegon has entered into a voluntary stipulation with the Water Resources Commission calling for a higher degree of treatment, phosphorous removal and chlorination, and the Muskegon County has proposed a treatment system, and the initial plan has been approved, that provides for the collection of all waste from the Muskegon area, that is Muskegon Heights, the City of Muskegon, and North Muskegon, will transport this back inland. It will be treated and then the effluent from the treatment system

will be sprayed upon approximately 6,000 acres of land and there will be no discharge to the lake.

Q. Well, then, Mr. Purdy, if I understand your testimony, with the possible exception of Escanaba, for the various ports we have gone through here, none, at the present time, have secondary treatment? A. Of the various ports that you went through?

Q. Are there any other ports that you know of that presently, today, have secondary treatments? A. St. Joseph-Benton Harbor, I believe, is a port. St. Joseph-Benton Harbor provides secondary treatment and chlorination.

Q. Then there are only two, Escanaba and St. Joseph-Benton Harbor? A. I am not familiar with what you consider to be ports.

(23) Q. I have named most of the ports that our vessels trade to. A. Of those you have named, those are the two.

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Q. Has your agency published any rules or regulations defining or specifying what is an approved dock side or onshore collection treatment facility? A. No, sir.

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(24) Q. Well, now, have you published any rules or regulations dealing with such matters as fittings or connections or anything of that nature so there will be uniformity among these vessels? A. The Commission has adopted certain interpretative rules with respect to the statute, but it does spell out the size of the fittings to be used.

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(25) Q. (Mr. Elder) Section 8. Now, that section provides, about three-quarters of the way down, that commercial docks and wharfs designed for serving and loading cargo and/or freight from commercial water craft must furnish facilities if deemed necessary as prescribed by the Commission to accommodate discharge of sewage from heads and galleys and for deposit of litter, garbage, trash

or bilge waters from the water craft which utilize the docks or wharfs.

Now, Mr. Purdy, has your agency made any determination as to what commercial docks are necessary to have these facilities? A. No, sir.

Q. You have published no rules or regulations of that nature? A. No, sir.

Q. Have you prescribed any such facilities for commercial vessels? A. No, sir.

Q. Do you intend to publish any rules or regulations of that nature? A. If it is necessary I expect the Commission will. At this point in time, they have contacted the various—or various commercial docks, or owners of these docks, and have asked for voluntary installation of facilities to service boats that would dock.

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(27) Q. Now, I direct your attention to Section 3 of the Act. Have—has your agency promulgated any rule or regulation spelling out or defining what is a noxious discharge? A. No, sir.

Q. Have you published any rule or regulation spelling out what discharges otherwise make the waters unwholesome or are detrimental to the public health or welfare or to the enjoyment of waters for recreational purposes? A. No, sir.

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(33)

EXAMINATION by Jerome Maslowski.

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(34) Q. Did you have any conferences with any commercial shippers and carriers? A. My staff members have held a number of conferences with the owners.

Q. Would you have any idea as to which of the Plaintiffs that your staff contacted? A. Well, we have—and I don't know who has, which one belongs to say which owner of the Plaintiffs, but we have contacted and have had occasion to at least partial compliance with the Commission requirements from the Grand Truck Western Rail-

road; from the Wisconsin and Michigan Steamship Company, the Chesapeake and Ohio Railroad, the Boblo boats, American Oil Company tankers, Kinsman Marine Transit Company, the Arnold Transit Company, Welch Soo Locks Tour Boats, the Beaver Island Ferry, United States Steel, Hanna Mining Company, Canada National Railway, Atlantic-Richfield Oil Company, Gulf Oil Company, U. S. National Parks Service, The U. S. Corps of Engineers, the Orvin Sand Transportation (35) Company, Johnston Shipping Limited, the Ann Arbor Railroad Company, and the Ford Motor Company.

Q. Now, when you contacted carriers, what type of a procedure did you indicate to them as to, say, enforcement and compliance? A. Well, many of the shippers participated in at least one of the conferences and my staff members informed me and the others that the shippers expressed their concern that they would not be able to meet the January 1, 1971 date, or would not be able to be in compliance when their vessels started the 1971 commercial shipping season, and that there was not sufficient time to make the conversion, and in our discussion with the owners, or their representatives, we have indicated to them that we felt that this problem should be handled in the same fashion as any other existing problem, at a fixed shore installation. What I mean by this is that where an existing problem is identified by the Water Resources Commission, the Commission first attempts to develop a voluntary program of compliance that includes a reasonable time schedule for the facilities to be placed in operation. If this cannot be accomplished, why then the Commission carries through on formal enforcement action under other provisions of the statute, but now, specifically with respect to the commercial fleet, we felt, and have worked (36) towards obtaining a schedule which would set forth a time for the vessels to be in compliance with the Commission requirements.

* * * * *

(38) Q. Well, supposing they have something equivalent to secondary treatment, and the regulation is pro-

vided that they discharge this effluent in the middle of the lake? What is wrong with that? A. If this is—could be policed and so forth, and an assurance that this is the only point the discharge would take place, I don't see anything particularly wrong with it, however, the statute does not provide for that.

* * * * *

(42) Q. Well, supposing Mr. Elder's clients had been diligent and installed holding tanks aboard some of their ships. Where would they be pumping the stuff out into? A. This would depend largely upon the docks that they call on. In many instances, the vessels dock at their—at company owned facilities, and we have been in contact with these companies, and it is the company that owns the vessel to begin with, that they should provide this pump out facility at their own dock.

* * * * *

(43) Q. Let's assume a vessel has a holding tank, and it is just traveling through Michigan waters. It is outside of Michigan waters. The tank is getting pretty full. There's no pump out facilities anywhere. What do they do with the sewage they have got in the holding tank? A. Under the interpretative rules, it provides that the commercial vessels, because of the size of the holding tanks that will be installed on the vessels, can include facilities to pump that tank out. Now, it would be unfortunate, from the standpoint of pollution control, if it was necessary for that ship to pump out the contents of that tank in waters of the Great Lakes other than Michigan waters, but it could do so.

Q. How do you justify something like that? This is not pollution control, is it? (44) A. No, it is not pollution control, but from the standpoint of Michigan itself, jurisdiction ends within Michigan waters. The State of Indiana has adopted compatible legislation with that of Michigan including requirements for commercial vessels. The Port of Chicago requires that there be no discharge from vessels within the Port of Chicago, so that a number

of jurisdictions around the lakes are exercising their responsibilities.

Q. Well, now, under your rules, what are they required to put into this holding tank? A. At the present time we are looking at primarily sanitary waste from the toilet facilities. We do believe that when the conversion is being made, that in particular, on the commercial vessels, that the galley waste should be looked at depending upon the type of galley waste that they might have.

For example, if they have garbage grinders, certainly they shouldn't grind that as a part of the discharge waste and discharge this into the waters of the Great Lakes.

Q. Now, I think the complaint has been made that these tanks are difficult to put in; that some ships don't have the space to put them in. What is your comment on something like this? A. First, a number of vessels have indicated to us that they **(45)** will install these facilities, and I do not believe that these vessels are of unique construction with respect to other vessels that are on the Great Lakes, although again, I am not intimately familiar with the commercial fleet, but no matter what type of treatment facility is placed on the vessel, it requires some tankage; ~~it~~ requires some alteration of plumbing and I do not believe that the holding tank requirement would be of any great significant difference over that of the installation of the secondary treatment facility.

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(46) Q. What about this direct discharge by Mackinaw Island? Where **(47)** is this discharge being made? A. This is being made into the deep waters of Lake Huron off Mackinaw Island by a submerged pipe line.

Q. How far is the point of discharge from the island? A. That was installed several years ago. It is several hundred feet offshore, and I believe in 65 to 80 feet water depth, but this is not considered by the Commission to be a satisfactory arrangement and action has been taken to require treatment.

Q. Why is it that your Commission doesn't treat ships on an individual basis like you do municipalities? A. The —first of all, there are the requirements of the statute, and then secondly, the fact that the ships represent a mobile point of discharge rather than a fixed point of discharge. I believe, again, a third point would be the matter of operation of these facilities. I would expect that if there were a flow through device that then again this would come under, say, the requirements of 245 of 1929 as amended, which requires that there be a certified operator of that facility, and that a monthly report of the quality of the effluent would have to be filed.

* * * * *

(50) Q. Well, Mr. Purdy, assuming that this litigation was disposed of, eliminated, call it what you will, say that the Complaint was dismissed. What would the procedure of your Commission be relative to the shippers in proceeding against them as far as, say, installation of facilities was concerned? Would you say, "Well, now, you have to have these in next week"? How would you anticipate to proceed? A. Well, certainly Mr. Maslowski, this is a decision of the Water Resources Commission, the seven-man Commission, and (51) not its staff, but the staff, in its action, certainly would be guided by the past attitude of the Commission in dealing with any other pollution problem in the State of Michigan, and the Water Resources Commission has always instructed its staff to first seek voluntary compliance without additional formal action by the Commission; and this voluntary compliance can include a time schedule that the staff believes to be reasonable for compliance.

Now, if the staff is not able to reach agreement with the waste discharger, then this matter is brought before the Commission for their review and in my several years of experience with the Water Resources Commission, they have listened to the problem of municipalities and industries in meeting the Commission requirements and have been sympathetic to them in their time requirements to meet the Commission requirements, and even when they

have failed to meet the Commission requirements timely, the Commission has listened, and in many cases extended the time for compliance when the waste discharger has been able to show that he has worked diligently to meet the time schedule, but that unforeseen difficulties have caused a delay, and the Commission has not, in its past activities, sought the collection of a fine or enforcement through the court as a first order of priority in obtaining compliance.

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(53)

EXAMINATION by Scott H. Elder, Esq.

Q. I just have a few clarifying questions, Mr. Purdy. Isn't it true that pollution is pretty much a problem of concentration? A. Yes.

Q. So that if you could disperse all of this pollution and so forth it wouldn't be nearly as bad, would it? A. This would depend upon the particular type of pollutant. (54) There are some that are persistent. There are some that are accumulative, and there are some like—like nutrients that even when dispersed, create problems in the Great Lakes.

Q. Let's confine ourselves to the human body waste which is what we are concerned with here immediately. A. I am concerned with nutrients in human body waste, because we do have phosphorus contained in the waste from the human body, and that this is considered to be one of the key nutrients that has accelerated the rate of aging of the Great Lakes.

Q. Well, now, by requiring vessels to pump into shore side facilities, you are really adding to the concentration in those particular areas, aren't you? A. Not necessarily, because, for example, the City of Detroit's stipulation spells out a specific number of pounds that it can discharge into the Detroit River, and this is a fixed number no matter what the raw load is into the treatment plant.

Q. Now, you indicated earlier that in your opinion, secondary waste treatment aboard a vessel was all right provided it was not discharged into an area where there

was total body contact? A. Total body contact. You would have to add into that municipal water supplies.

(55) Q. Water resources. All right. By total body contact you mean swimming, that type of thing? A. Swimming, water skiing.

* * * * *

Q. You say Michigan jurisdiction extends out only to the international boundary line? A. Yes.

Q. And you know, generally, that the international boundary line passes through the Detroit River? A. I know that it passes through the Detroit River.

Q. So you would have no jurisdiction on the Canadian side of the river? A. That is correct.

Q. So that a vessel down-bound on the Michigan side could not pump out, or could not have overboard discharge, whereas a vessel proceeding up-bound on the Canadian side would be completely unrestricted. Isn't that true? A. I am not fully acquainted with the Canadian requirements with respect to discharge from commercial vessels.

Q. Let me put it this way: They would be out of your jurisdiction? (56) A. That is correct.

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Q. But under your Michigan law, even though those boats do have secondary treatment, however many there are, they would have to discharge ashore, wouldn't they, into a plant which has primary treatment only in most instances? A. Yes.

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(3)

REAR ADMIRAL WILLIAM F. REA, III.

EXAMINATION BY COUNSEL FOR PLAINTIFFS.

By Mr. Elder:

Q. Would you state your full name? A. William F. Rea, III.

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Q. And what is your rank in the United States Coast Guard? (4) A. Rear Admiral, United States Coast Guard.

* * * * *

Q. Since becoming an Admiral, what positions have you held in the Coast Guard? A. I was Commander, 9th Coast Guard District—the entire Great Lakes area for 2 years and since 1 July of 1970 I have been back here as the Chief Officer of Merchant Marine Safety.

Q. What generally is the 9th Coast Guard District? A. The 9th Coast Guard District encompasses the land area surrounding the Great Lakes area. Part of eight states bordering on the Great Lakes.

* * * * *

Q. Now, as the chief officer in charge of Merchant Marine Safety in Washington, what is your function? A. To head up the entire Merchant Marine program throughout the United States and overseas where we have it.

* * * * *

Q. Would you explain to us what a Certificate of Inspection is. A. A Certificate of Inspection is a document that includes considerable amount of data that the vessel has been inspected and meets the applicable standards and applicable regulations and the Certificate of Inspection includes data as far as the minimum manning requirements and all data on firefighting and lifesaving data and other pertinent details related to equipment.

* * * * *

Q. What parts of the vessel does that inspection involve? A. The hull, the machinery—all parts.

Q. The entire vessel? A. Yes.

Q. What about the structure of the vessel? A. The inspection encompasses inspection for structural adequacy.

* * * * *

Q. Now, bearing in mind the class of vessel we have been discussing, what would be your inspection requirements where an owner wants to install holding tanks or incinerating devices? A. Any equipment such as you

mentioned has to obtain our approval. The first stipulation would be the owner would have to submit plans of his proposal to our office in Cleveland where we have a technical group and he can proceed when they are approved. The requirements in this particular case of the equipment only relates to what effects they may have on the safety of the vessel. In case of an incinerator it may pose a fire hazard and from a safety standpoint it is not a hazard.

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PLAINTIFF'S EXHIBIT 22.

Proposed Sewage and Garbage Pollution Prevention Regulations.

Regulations Respecting the Prevention of the Pollution of Waters by Sewage or Garbage from Vessels

Short Title

1. These Regulations may be cited as the *Sewage and Garbage Pollution Prevention Regulations*

Interpretation

2. In these Regulations,
   (a) "Board" means the Board of Steamship Inspection created persuant to Part VII of the *Canada Shipping Act;*
   (b) "B.O.D." (Biochemical Oxygen Demand) means the oxygen, measured in milligrams per litre, required by bacteria while stabilizing the organic matter in a sample of sewage under aerobic conditions over a period of five days at 20 degrees Centigrade;
   (c) "Canadian waters" means the territorial sea of Canada and all internal waters of Canada;
   (d) "coliforms" means all of the aerobic and facultative anaerobic gram-negative, non-spore forming, rod shaped bacteria that
      (i) in the Tube-Dilution (most probable number) test, ferment lactose with gas formation within 48 hours of incubation at 35 degrees Centigrade, or
      (ii) in the Standard Membrane Filter Technique, produce a dark colony (generally purplish green) with a metallic sheen on M-Endo Broth or Agar within 24 hours of incubation at 35 degrees Centigrade;

(e) "garbage" means solid galley waste, paper, rags, plastics, glass, metal, bottles, crockery, junk or similar refuse;

(f) "inland waters of Canada" means all the rivers, lakes and other navigable fresh waters within Canada, and includes the River St. Lawrence as far seaward as a straight line drawn

(i) from Cap des Rosiers to West Point Anticosti Island,

(ii) from Anticosti Island to the north shore of the River St. Lawrence along the meridian longitude sixty-three degrees west;

(g) "Inspector" means

(i) A Steamship Inspector appointed under the *Canada Shipping Act* or

(ii) a person designated as an Inspector pursuant to section 11;

(h) "pleasure craft" means a vessel being used for pleasure and not carrying persons or goods for hire or reward, and includes a vessel chartered or hired by or on behalf of the persons carried therein;

(i) "sewage" means human waste and includes wastes from water closets, urinals or hospital facilities handling fecal material;

(j) "vessel" includes any ship or boat or any other description of vessel used or designed to be used in navigation.

Application

3. (1) These Regulations apply to vessels other than pleasure craft.

(2) Part I applies on the inland waters of Canada

(a) to a vessel the keel of which is laid, construction of the hull of which is commenced, or major conversion of which is contracted

for on or after (date of Order in Council); and

(b) after (date of Order in Council plus three years), to a vessel the keel of which was laid or construction of the hull of which was commenced before (date of Order in Council).

(3) Parts II and III apply to vessels while they are in Canadian waters.

Exemption

4. Notwithstanding anything contained in these Regulations, the Board may exempt any vessel from full compliance with any of the requirements of these Regulations.

PART I

Sewage Disposal

5. In the case of a vessel carrying more than 10 persons, no person shall discharge from the vessel into the water any sewage

(a) containing more than 1000 coliforms per 100 millilitres;

(b) containing more than 150 milligrams of suspended solids per litre; or

(c) with a B.O.D. of more than 50 milligrams per litre.

6. In the case of a vessel carrying not more than 10 persons, no person shall discharge from the vessel into the water

(a) any sewage containing more than 1000 coliforms per 100 millilitres, and

(b) while the vessel is in waters that may be designated by the Minister of Transport, any sewage

(i) containing more than 150 milligrams of suspended solids per litre; or

(ii) with a B.O.D. of more than 50 milligrams per litre.

7. Notwithstanding sections 5 and 6, the Minister of Transport may designate waters into which the discharge of sewage is prohibited.

8. Dilution of sewage as a means of attaining the standards for sewage described in sections 5 and 6 is prohibited.

9. Arrangement shall be provided so that samples of the sewage discharge may be obtained from inside the vessel.

PART II

Garbage Disposal

10. No person shall discharge garbage from a vessel into Canadian waters.

PART III

Enforcement

11. The Minister may designate a member of the Public Service of Canada or the Royal Canadian Mounted Police, a provincial municipal or harbour police officer or a water pollution control officer as an Inspector for the purposes of these Regulations.

12. An Inspector may go on board any vessel within Canadian waters and may

(a) inspect the vessel or any part thereof;

(b) examine the owner, master or any member of the crew respecting any violation or suspected violation of these Regulations;

(c) take such samples as considered necessary from the vessel; and

(d) investigate the circumstances relating to an alleged pollution of Canadian waters by sewage or garbage.

13. (1) No person shall obstruct or hinder an Inspector in the performance of his duties or functions under these Regulations.

(2) No person shall make a false or misleading statement either verbally or in writing to an Inspector engaged in the performance of his duties or functions under these Regulations.

(3) Every person shall give all reasonable assistance requested by an Inspector to enable the Inspector to perform his duties and functions under these Regulations.

Penalties

14. Where sewage or garbage is discharged from a vessel contrary to these Regulations, the owner and the master of the vessel as well as the person directly responsible for the discharge thereof is guilty of an offence and is liable on summary conviction to a fine not exceeding five thousand dollars or to imprisonment for a term not exceeding six months or to both such fine and imprisonment.

15. Every person who contravenes or fails to comply with any of these Regulations is guilty of an offense and is liable on summary conviction to a fine not exceeding five thousand dollars or to imprisonment for a term not exceeding six months or to both such fine and imprisonment.

PLAINTIFF'S EXHIBIT 23.

Communiqué No. 42, for Immediate Release
June 23, 1970.

COMMUNIQUÉ OF THE CANADA/UNITED STATES MINISTERIAL MEETING ON GREAT LAKES POLLUTION.

Department of External Affairs
Ministère Des Affaires Extérieures

Ministers and representatives of the governments of Canada and the United States met today in Ottawa to discuss common problems of pollution in the Great Lakes. The Canadian delegation included the Minister of Energy and Resources Management from the Province of Ontario. At the meeting they discussed each country's current plans, programs and legislation to improve water quality in the Great Lakes.

Ministers and representatives discussed the recommendations in a Special Report submitted in April by the International Joint Commission on potential oil pollution, eutrophication and pollution from watercraft. It was agreed:

a) The Canadian contingency plan for the Great Lakes for spills of oil and hazardous materials which will shortly come into operation, will be fully coordinated with the new United States plan.

b) Inputs of phosphates into the Great Lakes should be reduced in order to arrest and reverse eutrophication of the Great Lakes. Canadian legislation will permit the Canadian Government to implement the Commission's recommendations for reducing and eliminating phosphates from detergents and the Canadian Government has announced its intentions to take action that would meet the IJC recommendations. Standards are in effect on the United States side of the Lakes which will require the

achievement of an 80% removal of all phosphates from municipal and industrial sewage (including detergents) by 1973, and in advance of the target date of 1975 recommended by the Commission; the United States Government is continuing its intensive review of the removal of phosphates from detergents.

c) In both countries legislation exists for the regulation of waste disposal by commercial vessels and pleasure craft; and the Ministers concerned have agreed to achieve compatible regulations.

It was noted that the Ontario Government intends to modify its gas drilling program on Lake Erie to conform to the recommendations of the Commission in the Special Report. There is no gas well drilling by Michigan, Ohio, New York or Pennsylvania in Lake Erie. It was further noted that phosphate removal facilities are being initiated by Ontario with a view to meeting the recommendations of the Commissioners.

Ministers and representatives expressed deep concern about the critical situation in the Great Lakes, and noted the determination of the Governments to take decisive action.

The Ministers have agreed to the establishment of a working group to consider common water quality objectives and implementing programs which may be proposed by either government to the working group. This working group will report back to this Ministerial Conference which will be reconvened subsequent to the final report of the IJC.

The United States delegation was led by the Honourable Russell E. Train, Chairman of the Council on Environmental Quality; United States Ambassador Adolph Schmidt; Mr. Carl L. Klein, Assistant Secretary of Interior for Water Quality Research and Rear Admiral Robert W. Goehring, Chief of Operations, U. S. Coast Guard, who were accompanied by senior officials from the Department of State, the Department of the Interior, the Department of Transportation and the Council on Environmental Quality.

The Canadian delegation was led by the Honourable Mitchell Sharp, Secretary of State for External Affairs; the Honourable J. J. Greene, Minister of Energy, Mines and Resources; the Honourable J. Davis, Minister of Fisheries and Forestry; the Honourable Herb Gray, Minister without Portfolio and the Honourable George Kerr, Minister of Energy and Resources Management for Ontario.